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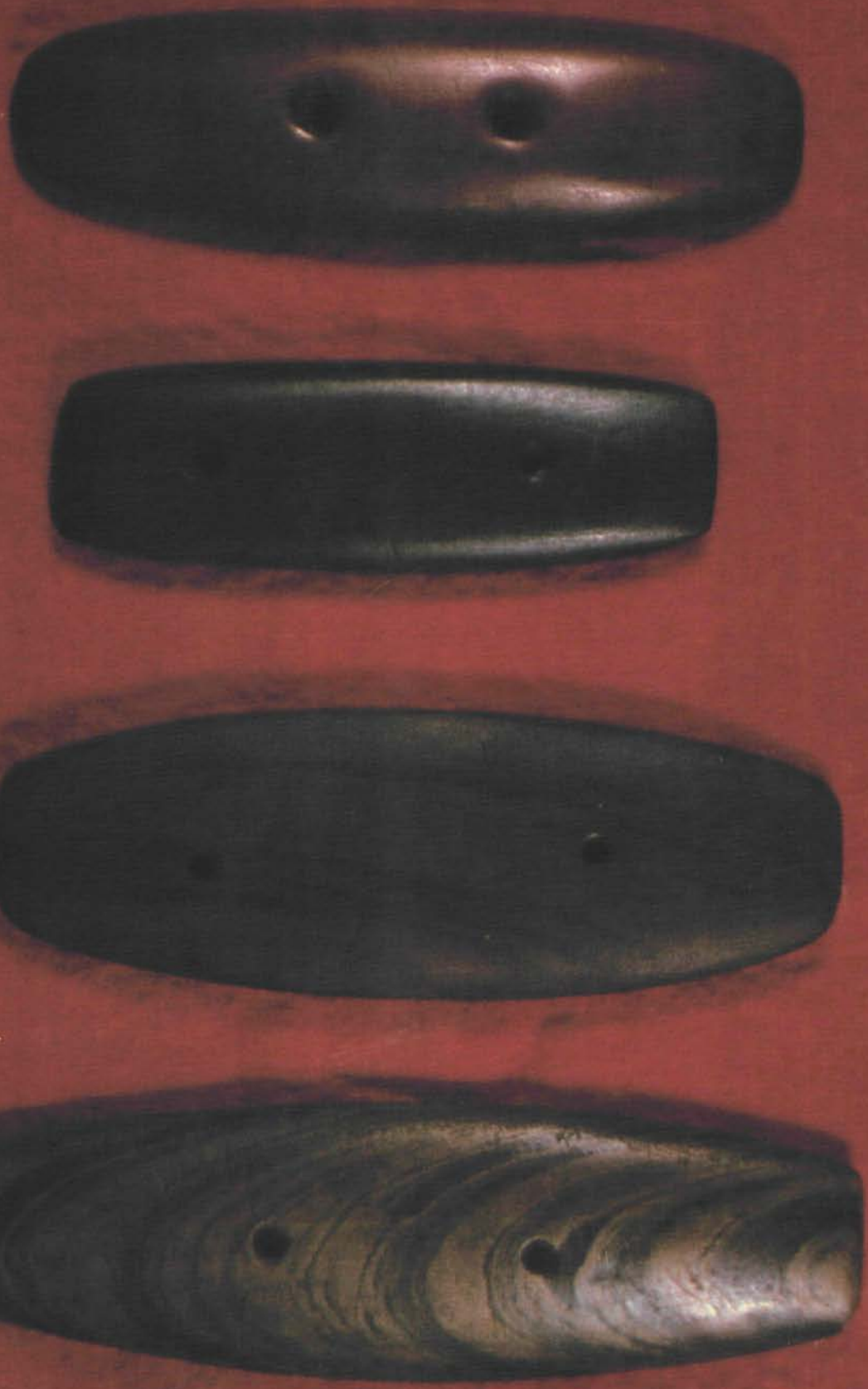

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Front Cover

Four gorgets of unusual stone from the collection of Jack Hooks, Mansfield, Ohio. Top gorget is of a deep red material probably containing large amounts of iron oxide. Second gorget is of hematite, an unusual material in gorgets. Third is of red and black banded slate. Fourth is rare banded slate with green and yellow banding.

EDITOR'S PAGE

In May of next year our Society will again elect a new group of officers and Trustees to guide us for the succeeding two years. As chairman of the Nominating Committee, it is my duty, along with committee members, to present a slate of candidates for the various offices. We will elect a new President, Vice-President, Executive Secretary, and Treasurer and Recording Secretary as well as four new Trustees. The terms of all officers are for a two year period while the terms of the Trustees are for four years. Four Trustees are elected every two years so that we always have four incumbent Trustees.

In the past several elections our ballots have offered no choice of executive officers—only the Trustee positions having more than a full slate. In other words, our members have had all officers, except for Trustees, picked for them by the Nominating Committee. This in itself is not as dictatorial as it may seem since in many elections, the last one included, we have had difficulty even filling the slots for a full ballot. After a great deal of talking with many members, officers past and present, Trustees and potential candidates, we have come to the conclusion that our Society has grown to such a size that a new approach to our election tradition is desired. Enough people have shown an interest in the problems the Society has experienced in recent years and its future direction that we believe we should present a ballot which offers more than one choice for some of our officerships, as well as those of Trustee. This will, for the first time, give our members the opportunity to select a leadership of their choice for the next two years. In addition, this will hopefully involve more people in the governing of our Society, an involvement of new blood which is sorely needed if our Society is to be a growing and viable organization. In fact, even the losing candidates will probably be put to good use since traditionally there are vacant positions to be filled by our new President.

It is the hope and desire of the Nominating Committee to offer as many dedicated and qualified people as possible for election as officers and trustees. In this regard, we are making an appeal to everyone who is interested in seeing our Society grow and prosper to offer themselves as candidates as officers or Trustees for the coming election. If you would like to become more involved, don't hesitate to let me or members of the Nominating Committee or other officers know of your availability

Robert N. Converse
Editor

Adena Pottery in the Walhonding Valley Part II

by
A. J. Allen
Canton, Ohio

The many tilled fields located in the Walhonding River valley have been popular with artifact hunters for upwards of 50 years. Unlike early surface hunters who searched mainly for stone artifacts, the modern collectors realize the importance of the less popular artifacts and will retrieve scrapers, blades, hammerstones and pottery sherds mostly ignored by others. Unlike lithics which are virtually immune to ravages of time, pottery will disintergrate when exposed to weather, hence the urgency to retrieve potsherds immediately upon exposure. Large numbers of potsherds have been collected from plowed fields in this area during the past 10 years, and recently several collectors submitted their potsherds for a group comparison and study, resulting in this report.

Pottery Sample

Potsherds were collected from several different fields covering a length of nearly 2 miles down river from the village of Walhonding. On three occasions the area of exposed sherds was probed resulting in discovery of pottery "dumps" containing quantities of additional sherds. One "dump" was a crudely shaped pit approximately 20 inches by 24 inches by 18 inches deep containing 708 potsherds. A similar pit found several years earlier in the same field held 261 sherds. A third pit found on a different field contained 191 sherds. No other artifactual material was found in the pits with the potsherds. The plowed-out specimens totaled 1,409 body sherds and 89 rims. Included in this total were 55 body sherds and 4 rims of the Fayette Thick type and 11 cordmarked body sherds which were not definitely identified as to type, as no cordmarked rims were included in the sample. Fifteen rims were selected for study, each showing physical differences thus indicating 15 different vessels. Characteristics of these rims are listed in Table 1. Basal sherds included in the sample indicated at least four vessels had flat bottoms. The combination of rim photographs accompanied by profile drawings is again used in this report in lieu of descriptive text.

Temper and Construction

Nearly half the sample was exclusively limestone tempered and traces of this material were present in most all sherds, occasionally being finely crushed. Other temper material included grit, crushed quartz, and mica. Although no coil contours were noted in the sample, the many parallel break lines evident on rim sherds would suggest coil construction.

Fayette Thick Type

A total of 60 sand tempered sherds of this type were in the sample but were collected from various fields. The rim shown in Figure 1 was plow broken and reassembled. It exhibits intermittent parallel slashes that may have been an attempt at incising. Thickness is a uniform ¾ inch and the profile drawing indicates a very straight rim.

Adena Plain

A recurvate rim is shown in Figure 2 while Figure 3 illustrates a lip design fashioned by molding a clay coil around the top of the rim. Figure 4 shows the only severe rim flare in the sample and Figure 5 depicts an incurvate rim showing the stucco-like result of leeching by ground water.

Thickened Rim Types

Figures 6 through 9 are variations of this type and represent 47% of the rim styles. The thickened areas did not appear to be made by using an added rim strip but by thinning a portion of the rim below the lip creating a collar effect. Width of this collar varied between ⅜ and 1 inch but did not follow any proportionate pattern relative to vessel size.

Restored Vessels

Several dozen cordmarked sherds were recovered from the site described in part I of this report (Allen 1981). Some of these sherds were fitted together as shown in Figure 10. This vessel with a prominent cordmarked lip appears to be identical to the Fort Ancient Baldwin Phase vessel illustrated by Griffin (1966 Pl. 16). Figure 11 shows a reconstructed Adena Plain pot recovered from this same site. It is 15 inches in height and has a top opening of 8½ inches.

Acknowledgements

Appreciation is extended to the collectors who catalogued their potsherds and kept them intact and to those who assembled the rims.

Special thanks is again extended to Tom Grubb of Mt. Vernon, Ohio for the photos.

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1981 Adena pottery in the Walhonding valley: part I. *Ohio Archaeologist* 31(3): 10-15.

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1966 The Ft. Ancient Aspect. *University of Michigan Museum of Anthropology, Anthropological Papers* 28. Ann Arbor, Michigan

Table I
Adena Pottery Rimsherd Data

Rim No.	Rim Type	Lip	Lip Angle	Rim Contour	Thickness (inches)	Temper
1	Thickened	Rounded	—	Flared	5/16*	Limestone
2	Thickened	Flat	Beveled	Straight	7/16*	Quartz
3	Thickened	Rounded	—	Incurvate	5/16*	Limestone
4	Plain	Flat	Level	Flared	5/16	Limestone
5	Thickened	Flat	Level	Flared	5/16*	Limestone
6	Thickened	Flat	Level	Flared	3/8*	Limestone
7	Plain	Rounded	—	Flared	5/16	Fine Grit
8	Plain	Flat	Level	Straight	3/8	Fine Grit
9	Plain	Flat	Beveled	Flared	3/8	Fine Grit
10	Plain	Rounded	—	Straight	1/4	Limestone
11	Thickened	Rounded	—	Straight	3/8*	Coarse Grit
12	Plain	Flat	Beveled	Flared	1/4	Quartz
13	Plain	Rounded	—	Incurvate	7/32	Fine Grit
14	Thickened	Rounded	—	Flared	3/8*	Limestone
15	Plain	Rounded	—	Flared	3/8	Fine Grit

**Denotes maximum dimension through thickened rim*

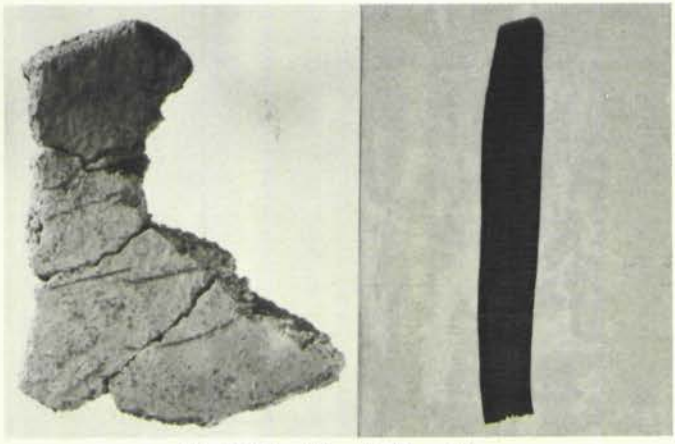

Fig. 1 (Allen) Fayette Type Rim

Fig. 2 (Allen) Adena Plain Rim

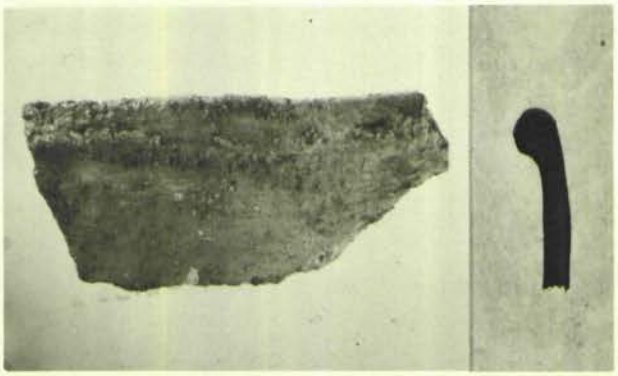

Fig. 3 (Allen) Molded Rim

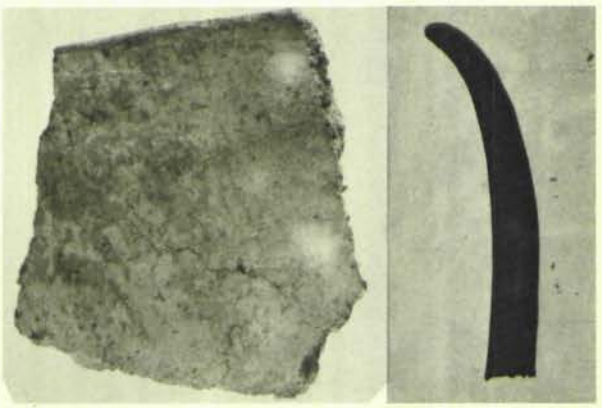

Fig. 4 (Allen) Flared Rim

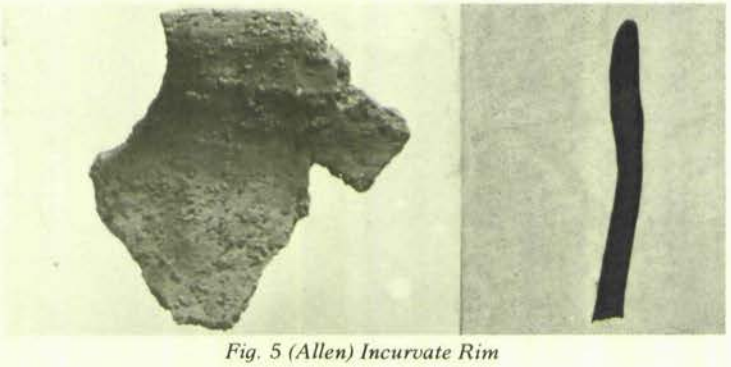

Fig. 5 (Allen) Incurvate Rim

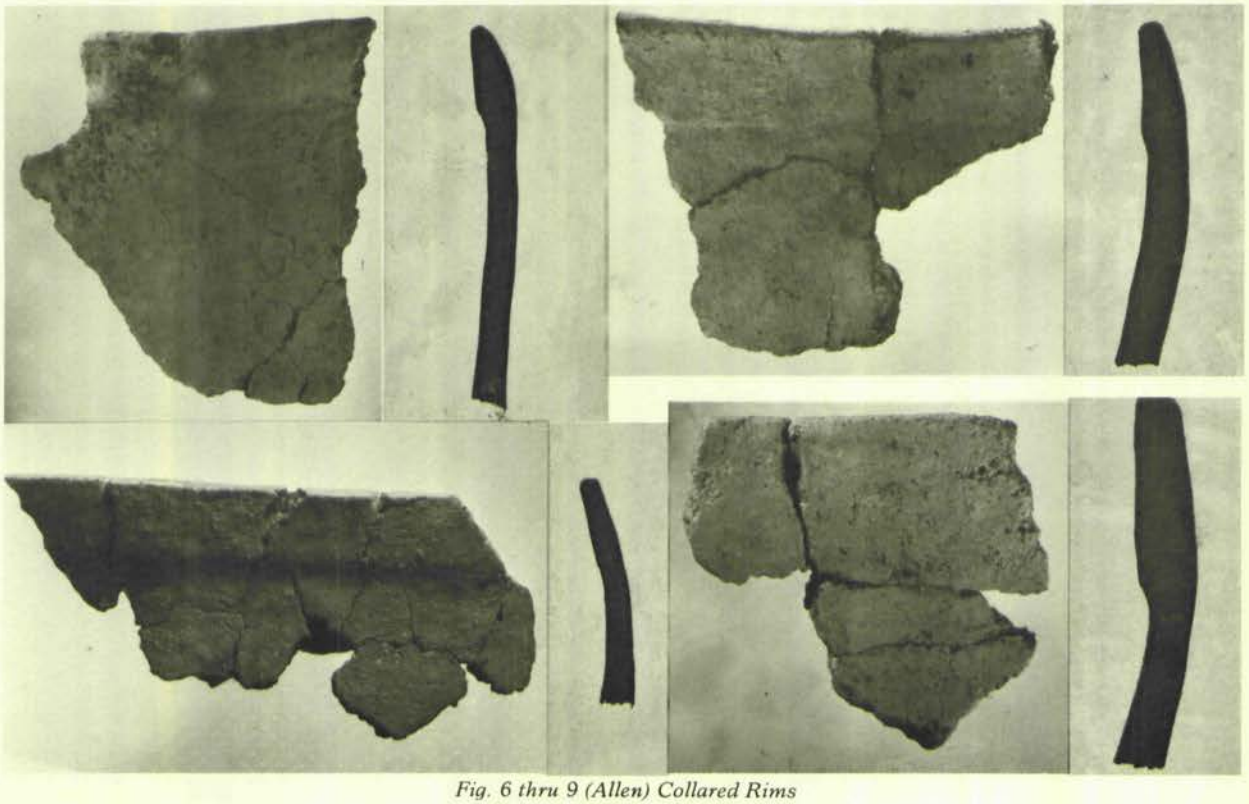

Fig. 6 thru 9 (Allen) Collared Rims

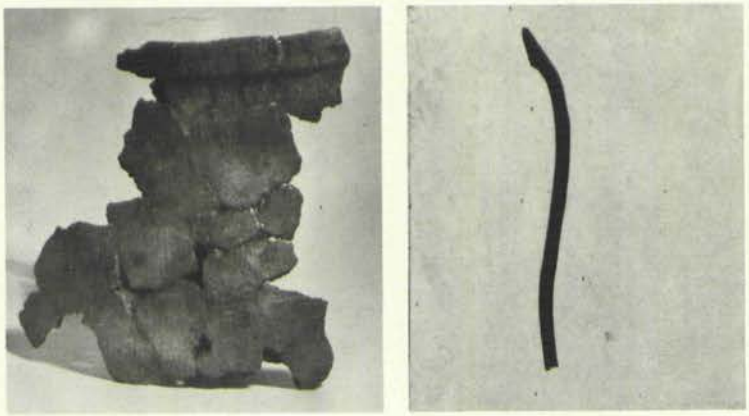

Fig. 10 (Allen) Rebuilt Rim

Fig. 11 (Allen) Rebuilt Pot

An Arthropod Effigy Pipe From the Richards Site

by
Elizabeth Reeb, Zanesville, Ohio
and
James Morton, Columbus, Ohio

Continuing excavations at the Richards Site in Muskingum County have produced the usual effigy pipe shown in the accompanying photographs. The pipe was just an isolated find in one of the over 600 refuse pits excavated at this 13th century Fort Ancient village. The effigy figure incorporating the bowl of the pipe has been variously identified as a crayfish, moth (possibly Crecropia), or bumble bee, and there are probably other possibilities within the phylum Arthropoda. This pipe is significant not only as a fine example of prehistoric artistry, but also is unique in that it is the only example of an arthropod effigy form that we know of for Fort Ancient.

The pipe is fashioned from a yellowish limestone. The tips of the "wings" or "pincers" are red, along with portions of the back of the pipe around the stem aperture, possibly representing intentional staining or painting. The overall length of the pipe from the lip of the bowl to the tip of the sectioned tail is 50mm; the maximum exterior bowl diameter is 25mm, though the overall "wing span" of the pipe is 51mm. The interior bowl diameter is 15mm; the exterior stem aperture is 12mm in diameter; the interior stem aperture is 3mm in diameter; and the exterior height of the bowl lip above the stem aperture is 20mm. As with many other Fort Ancient effigy pipes, the "face" of the animal points away from the smoker, the face in this case consisting of two small almost imperceptible nodes for eyes just below the lip of the bowl. Between the two eyes is a single sectioned feeler or antenna carved in relief. It is interesting to note that arthropods always have a pair of these sensory appendages; the carver in this case taking some stylistic license.

Though probably more than 90% of all the refuse features at Richards have been excavated, less than a dozen pipes have been found. To borrow a phrase from Hanson (1975:87) " . . . smoking was not a major preoccupation with these people." Most of the pipes recovered are of the stemless plain bowl variety, though three other effigy forms have been found. They include a limestone human face effigy which accompanied an adult male burial, an unfinished limestone animal (bear ?) head effigy, and the ceramic squatting human figure illustrated in the initial Richards site report (Carskadden and Morton, 1977).

References

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1977 The Richards Site and the Philo Phase of the Fort Ancient Tradition. *Occasional Papers in Muskingum Valley Archaeology* 1-9.

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1975 The Buffalo Site—A Late 17th Century Indian Village Site (46Pu31) in Putnam County, West Virginia. *Report of Archeological Investigations No. 5*, West Virginia Geological and Economic Survey, Morgantown.

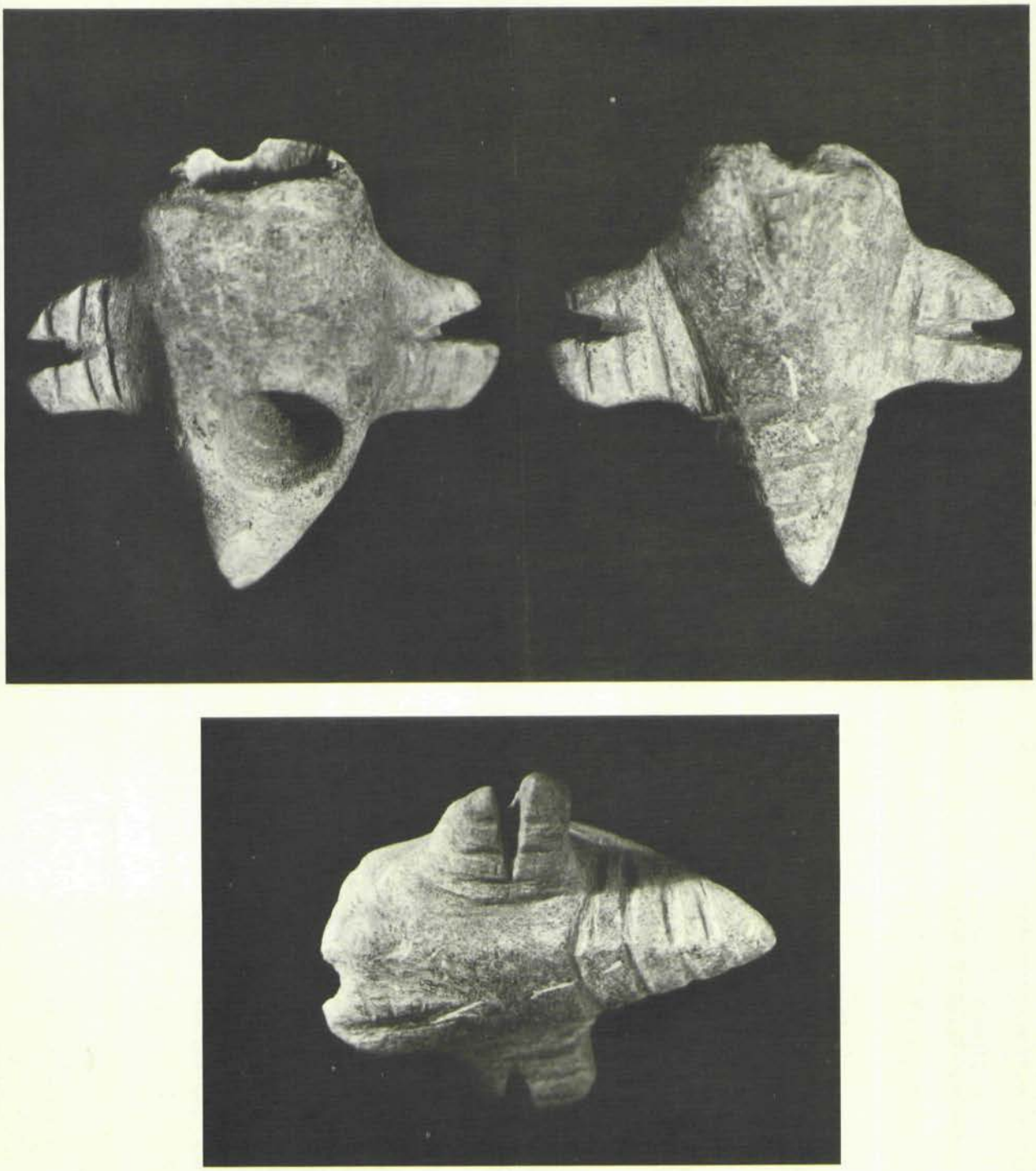

Fig. 1 (Reeb and Morton) Various views of the arthropod effigy pipe found at the Richards Site, Muskingum County, Ohio.

Has the ASO Become 'Big Business'? Part II

Scott Haskins
484 Stinchcomb Drive
Columbus, Ohio

In a previous article ("Has the ASO Become 'Big Business'?" "Ohio Archaeologist," Winter 1981) I sought to demonstrate that our larger than ever checking/savings account in no way signifies a departure by the Society from its role as a cohesive force for collectors wishing to buy, sell, trade and display Indian relics. I also wished to justify, for any one who may feel such justification necessary, the fiscal readings we report at general membership meetings. Increased revenues are derived primarily from an increasing membership roll; more collectors, more professional archaeologists, more museums and more libraries are taking an interest in our activities and our publications. As the current Treasurer of the Society I could also list some of the expenses that we incur during a typical year. Many should have been readily apparent, e.g., printing costs for a 50-plus page magazine, room rent for our indoor meetings, expenses for speakers traveling from out of state. Let me now continue with the discussion of how and why the Society spends its (our) money.

The Archaeological Society of Ohio has one paid employee, the business manager. He receives $290.00 a month for performing a myriad of duties, including the sale of all soft and hardbound publications, binders, lapel pins, and decals. He solicits and receives membership dues, mails membership cards, and maintains current addresses for some 2,000 people. The business manager also answers letters from Society members and the general public and completes the highly complex non-profit organization tax return at the end of the year.

The Editor of this magazine is reimbursed for office and equipment/supplies expenses; the rate established by the officers of the ASO is currently $200.00 a month. This sum helps cover the cost of black and white film, color film, camera and lens maintenance, paper, postage, and primarily travel. It probably does not cover the cost of many hours of editing, typing of contributors' handwritten manuscripts, organizing layout, the preparation of editorials and book reviews, providing file space and use of his home as an office.

The ASO has a telephone credit card, issued to officers and the business manager. It is occasionally necessary for people scattered in various parts of the state to contact one another between regularly scheduled meetings. Our phone bill has ranged from $4.00 to $38.00 a month, and averages about $16.00. Our August, 1981 billing was $7.34.

There is an old saying that "it takes money to make money." Indeed, the special remittance envelopes sent to members as a convenience for paying dues cost the Society some $150.00 in toto. The printing cost for this year's membership cards returned to dues-payers was $85.00. We purchased 10,000 catalog (magazine) size envelopes in October, 1980, for $670.00, and 10,000 more in July, 1981—for $720.00. Some 3,000 letter-size envelopes cost $75.00 last October. An order for 2,000 identical envelopes brought a bill for $67.50 this past July. We buy the address labels that go on the large envelopes, $5.25 per 300 as of August, 1981. One of the most frequent bills we receive during the year is for the revision of our computerized mailing list. These revision fees run from $4.00 to $40.00, depending on the number of members who have had a change of address. The Society buys postage stamps for the business manager, treasurer, and recording secretary.

The ASO has, of course, other sundry expenses. Some expenditures are necessary—$25.00 to file a non-profit organization tax return (?), and some are just a good idea—a $150.00 purchase last November for a complete collection of ASO magazines back to 1950.

It is important to realize that the bulk of our expenses are related, directly or indirectly, to the process of communicating significant information to the membership. Directly through printing costs and envelope purchases, etc., indirectly through providing a token salary for a business manager/salesman. Clearly it is more expensive and more complicated to serve 2,000 people than 200, but the benefits of being able to do so certainly outweigh any disadvantages.

A Fossil Bone Collection from Big Bone Lick, Kentucky

by Ray Tanner and Dennis Vesper
517 E. 21st St., Covington, Kentucky

Mr. Parker Melvin, a long time member of the ASO, has requested that the senior author act as his agent and announce his intention to donate his collection of pleistocene fossils to the state of Kentucky. The Melvin collection will be given to the Big Bone Lick State Park Museum to be used as a study collection. These fossils were collected over more than twenty years during the 1940's and 1950's before the state of Kentucky purchased the property which now comprises the park.

Over the years Mr. Melvin catalogued every bone he found and slowly amassed a valuable cross section of the faunal species that visited Big Bone Lick from late pleistocene to modern times. This donation is made to the Big Bone Lick Museum in an effort to reverse the trend of the past of collectors gathering as many bones as possible for their private collections.

Big Bone Lick is a series of natural salt or sulfur springs located in Boone County, Kentucky, about two miles east of the Ohio River and about twenty miles south of Cincinnati. The springs, or seeps, were found along Big Bone Creek near its confluence with Gum Branch. These springs, called "licks", by the early settlers first attracted animals and then humans.

During the late pleistocene, larger herbivores visited the marshy area around the springs to lick the accumulated salt deposits, and some of these animals died and left their bones to mineralize in the water of the creek. The fauna, such as mastodon or giant bison, may have floundered in the swampy mire or perhaps the minerals in the water caused a problem with the animals' metabolism. It is also possible that early man may have been present and contributed to the demise of these animals.

When the pleistocene fauna of Big Bone Lick is compared to that from Rancho La Brea tar pit in California, it is interesting to note that approximately 85% of the La Brea species were carnivores while 85% of the Big Bone species are herbivores—animals preyed upon by man. There are sites in the Big Bone Lick area which have produced paleo points, but thus far no kill site of pleistocene megafauna have been reported. If such a site is to be found in the eastern United States, Big Bone Lick is one likely area in which it may be found.

**Editor's note: Big Bone Lick Park is included in the National Register of Historic Sites and Places and is protected by the National Antiquities act.*

The authors wish to extend their sincere appreciation to the following for their invaluable contribution to the worthwhile project of donating a rare collection to be enjoyed by all visitors to Big Bone Park.

Mr. & Mrs. P. Melvin
C. Tanner
C. Oehler
Mr. MacDonald
K. Tankersley
S. Vesper
D. Glacken
L. Karibo
W. Gaffield
L. McIntosh

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1977 A Late Pleistocene-Holocene vertebrate fauna from Red Willow county, Nebraska. Transactions of the Nebraska Academy of Sciences, 4:77-93

Jillson, Willard R.
1949 The discovery of pleistocene vertebrates at lower Blue Licks. Roberts printing Co., Frankfort, Kentucky

Schultz, John R.
1938 A late Quaternary mammal fauna from the tar seeps of McKittrick, California. Carnegie Institution of Washington, Washington D.C.

Webb, S. David
1974 Pleistocene Mammals of Florida. The University Presses of Florida, Gainesville, Florida

Webb, W. S. & Funkhouser, W. D.
1928 Ancient Life in Kentucky. The Kentucky Geological Survey. Frankfort, Kentucky p. 40-46

The above are the references to the Melvin Chart

Big Bone KENTUCKY[1]		MELVIN COLLECTION	Blue Licks KENTUCKY[2]	Melbourne, Brevard Co FLORIDA[3]	Red Willow Co NEBRASKA[4]	Rancho La Brea CALIFORNI[5]
Jefferson Ground Sloth	M?	*Megalonyx jeffersoni**	x	*M. wheatleyi*		x
Ground Sloth	M?	*Mylodon harlani**		x		x
Giant Beaver		*Castoroides ohioensis**		x		
Woolly Mammoth	M?	*Mammuthus primigenius**	x	x?		
Columbian Mammoth	M?	*Mammuthus columbi**	x	x	x	x
Mastodon	M	*Mammut americanum**	x	x		x
Bear		*Ursus sp.*?*		*U. americanus*		*U. optimus*
Horse		*Equus sp.**		x	x	*E. occidentalis*
Tapir		*Tapirus haysii**		*T. veroensis*		*Tapirus sp.*
Peccary	M	*Platygonus compressus**		x	x	*Platygonus sp*
Caribou		*Rangifer tarandus*			x	
Stag Moose		*Cervalces scotti**				
Wapiti/Elk		*Cervus canadensis*	x			
White Tailed Deer	M	*Odocoileus virginianus*	x	x	*O. sp.*	*O sp.*
Woodland Musk Ox	M	*Symbos cavifrons**	x		x	
Musk Ox		*Bootherium bombifrons**				
Extinct Bison	M	*Bison antiquus**			x	x
Modern Bison	M	*Bison bison*	x	x	x	

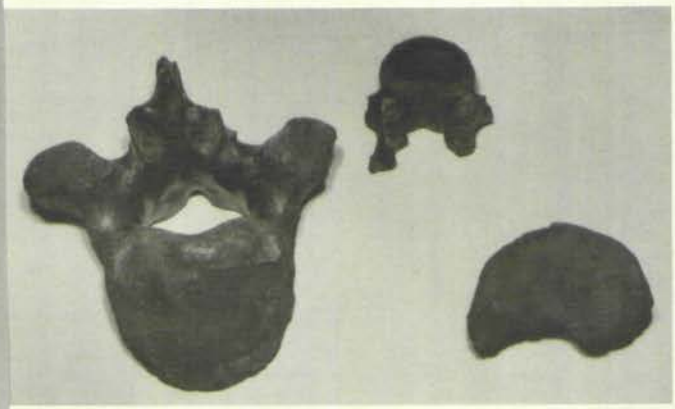
Table 1 (Tanner & Vesper) Big Bone Pleistocene mammals represented in other well known state faunas.
M—Big Bone Mammals present in the Parker Melvin collection
*—Extinct

Footnote: Table 1
[1](Webb & Funkhouser 1928)
[2](Jillson 1949)
[3](Webb 1974)
[4](Corner 1977)
[5](Schultz 1938)

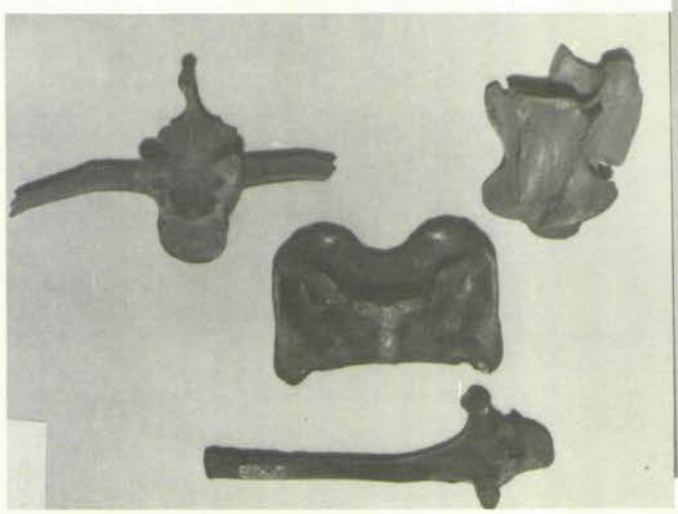
Bison skull *Elephant carpel*

Fig. 1 (Tanner and Vesper) Part of the specimens in the Parker Melvin collection from Big Bone Lick

Elephant carpel



Elephant vertebrae



Bison vertebrae

Bison leg bones

Bison rib — broken and healed

A Bison Beamer From the Madisonville Site, Hamilton County, Ohio

by
Ken B. Tankersley
Dept. of Anthropology
University of Cincinnati

The faunal environment has always been a valuable natural resource to man. In addition to being a food source, animals have provided raw material for tools. The great diversity of worked bone from Ft. Ancient sites indicates a full utilization of the ecosystem. However, bison remains are scarce from these sites.

Griffin (1943) indicates that the Madisonville site provides the only record of definite Ft. Ancient association with the bison. He believes that this situation is an indication that the bison were not common to the area. However, bison did occur in abundance until historic times 32 km. south west of the Madisonville site at the Big Bone Lick in Boone County Kentucky. Ft. Ancient sites are abundant at Big Bone Lick and occur along Gunpowder Creek where bison remains have been recovered from the Arrasmith site, a predominantly Ft. Ancient habitation. Oehler (1973) believes that the bison was probably also utilized at the Turpin site several kilometers southwest of Madisonville.

The beamer seen in figures 1 and 2 is a superb example of a bison bone tool from the Madisonville site. The tool was made from the dorsal spine of a thoracic (hump) vertebra from a *Bison bison* as seen in figure 3. Beamers were commonly made from the leg bone of a deer or elk. This fine bone artifact is part of the Parker Melvin collection. The thoracic vertebra used for comparison in figure 3 is from a Plains bison. Interestingly this bone was used to mark the spot where Custer fell at the Little Bighorn. The bone was given to Enno Meyer by the Sioux and Cheyenne of the Rosebud Agency in South Dakota. Enno Meyer was a famous Indian photographer during the turn of the century who worked with Remmington and Sharp. Presently, Parker Melvin owns the entire Meyer collection which he prizes highly.

References

Griffin, James B.
1943 *The Fort Ancient aspect.* University of Michigan Press, Ann Arbor, Michigan.

Oehler, Charles
1973 *Turpin Indians.* Cincinnati Museum of Natural History, Cincinnati, Ohio.

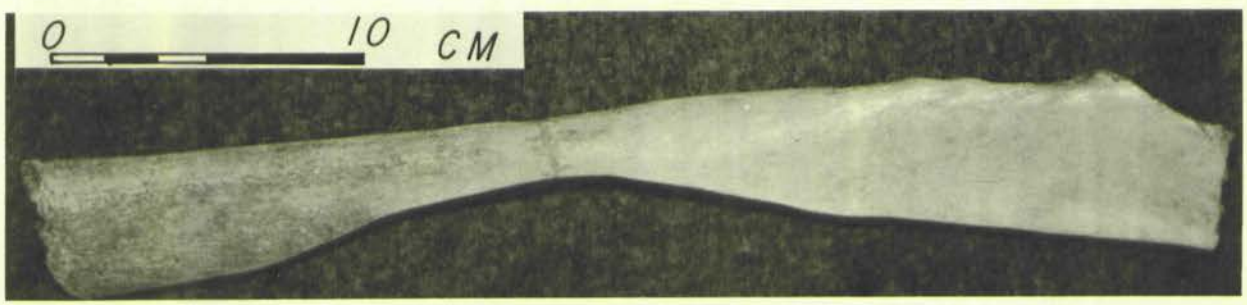


Fig. 1 (Tankersley) Bison bone beamer from the Madisonville site (profile).

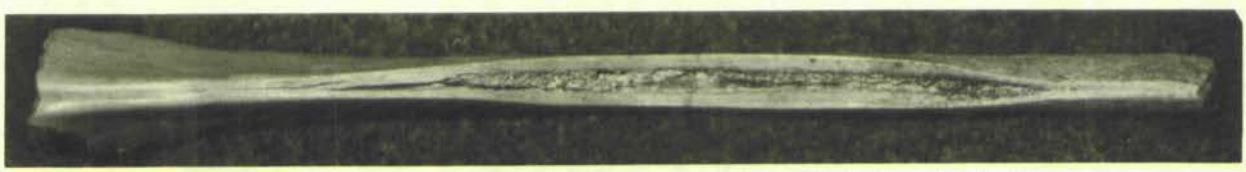


Fig. 2 (Tankersley) Bison bone beamer from the Madisonville site (anterior view)

Conversation Piece

by John R. Heath, Box 82, Sullivan, Ohio

The unique point shown in Fig. 1 was a surface find from Wellington Twp., Lorain Co., Ohio. The site has produced a number of fine artifacts from all cultural periods. At this location two small streams join and a spring at one time flowed just a few yards down stream. At the present time houses are being built on the site and in about two years there will be no more surface hunting—a fate which seems to befall many such sites.

A point with similar basal treatment is described by Claude Britt (Britt 1971: 8). Both the Britt point and my point seem to have been manufactured for use as knives rather than projectiles. The edges of the blade from the stem to the tip are worn smooth from use. The material is a glossy brown on the basal half and a reddish brown at the tip end. A light streak of what appears to be quartz runs through the stem. The source of this stone is unknown but it could be from the glacial drift. Two unhafted bifacial knives of this same material were also found on this site.

Reference

Britt, Claude Jr.

Artifacts from the Claude Britt Jr. Collection Ohio Archaeologist Vol. 21, No. 3, Columbus 1971.

Fig. 1 (Heath) Point from Lorain County. Length 3⅝ inches. Width 1¼ inches.

Eva Ceremonial Cache

Blake Gahagan
Rt 2 Maryville, Tennessee

The location of the Eva site in Benton County, Tennessee, prior to being inundated by the waters that formed Kentucky Lake, is shown in Figure 1. Situated in a broad flood plain that extended west for about one and one-half miles from the recent river bank to the chert hills, the site was on the highest elevation approximately one mile west of the river. The flood plain is a minor development of swell and swale topography. The swales are filled-in remnants of the old channels of the Tennessee River and tributary streams, while the swells are stream-deposited natural levees along the old watercourses (Lewis & Kneberg 1961:1).

The Eva site lies on one of these swells, an ancient river bank, just west of a wide swale known as Three Mile Slough, and at the eastern edge of Cypress Creek Slough (Figures 1 & 2). At the time the site was occupied, the river flowed down Three Mile Slough, with Cypress Creek emptying into it just north of the site. Thus the site was on the river bank with Cypress Creek to the west. The elevation of the long, low knoll was sufficient to prevent the site from being inundated by floods during its occupation except for one instance (Lewis & Kneberg 1961:1,4,9).

Excavations by the University of Tennessee at the Eva site began on September 11, 1940 and were ended on November 23, 1940. These excavations revealed the occupation of a single habitation area over a period of several thousand years. The occupation of the Eva site by these Archaic peoples was found to be represented by three components. Analysis of the cultural materials and physical types suggests that the people who lived there were descendants of the original group that established itself on the spot. The initial settlement probably took place nearly 8000 years ago (Lewis & Kneberg 1961:171).

The earliest of these components is the Eva phase which is considered early Middle Archaic in the Tennessee Valley. The term Middle Archaic is used to designate the period during which notched and stemmed projectile points, biface tools, and ground stone artifacts came into use. The Eva component is estimated to have lasted from about 6000 B.C. until 4000 B.C. (Lewis & Kneberg 1961:173).

The second component, the Three Mile, is estimated to have begun about 4000 B.C. and lasted until about 2000 B.C. Several new cultural traits were acquired during this period. Among these new traits were conoidal pestles, several projectile point types, stemmed scrapers, large chert pounders, prismoidal and tubular atlatl weights, turtle shell rattles, and an emphasis upon fishing and mussel collecting. The Three Mile phase was late Middle Archaic (Lewis & Kneberg 1961:173).

The third component, the Big Sandy, is estimated to have begun about 2000 B.C. and lasted for 1000 to 1500 years. This is the Late Archaic period during which further innovations were acquired and contact with Woodland peoples took place. Ledbetter and Benton points were the characteristic projectile points, and adz blades, green slate gorgets, tubular pipes, and copper beads appeared during this period (Lewis & Kneberg 1961:173).

The waters of Kentucky Lake cover the Eva site except during the winter months when the lake waters are dropped to low level. During this time portions of the site come out of the water and relics and cultural debris are exposed by wave action and rain.

Pictured in Figure 3 is an outstanding cache of points which was found washing from the lake bottom near the Eva site on November 25, 1965, by Herman F. Smith and his wife. The points in this cache represent larger examples of the smaller functional points of the same types from the Eva site. The largest point in the cache is 8¼ inches long and is a basal notched type that was classified as Cypress Creek I (Lewis & Kneberg 1961:37, 41), while the smallest is 5¼ inches long and is a Eva I type point. This large basal notched point is a variant type with a blunted end (Converse 1981:36) and is made from a black flint with white inclusions. Besides the Cypress Creek I point, the rest of the cache is made up of three Eva I type points, two narrow stemmed points, and two square back blades. The two square back blades and the largest Eva I point are made from Dover flint from the famous Dover flint quarry in neighboring Stewart County, Tennessee. The remainder of the cache is made from a reddish-tan chert found in the chert hills near the site. The points show fine workmanship, but no signs of use, and some of the edges have been finely retouched.

What was the purpose of this unusual cache of points and why were they cached? Were they of a ceremonial nature or simply cached

by their maker and never retrieved? The lack of any signs of use and their large size seems to be evidence of a ceremonial theory. Whatever their purpose, they are outstanding examples of the Archaic flintknappers skill.

References

Converse, Robert N.
1981 A Basal Notched Variety, OHIO ARCHAEOLOGIST, Vol. 31, No. 1, the Archaeological Society of Ohio, p. 36, Columbus.

Lewis, Thomas M. N. & Kneberg, Madeline
1961 EVA An Archaic Site. The University of Tennessee Press, Knoxville, Tennessee.

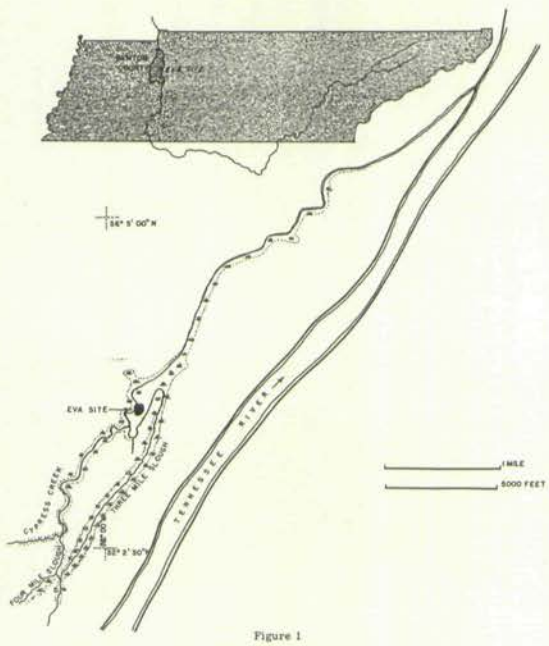


Figure 1
Map Showing Location of Eva Site
ii

Figure 1. Map showing the location of the Eva site. (Figure 1 taken from EVA An Archaic Site by T.M.N. Lewis and Madeline Kneberg, page ii)

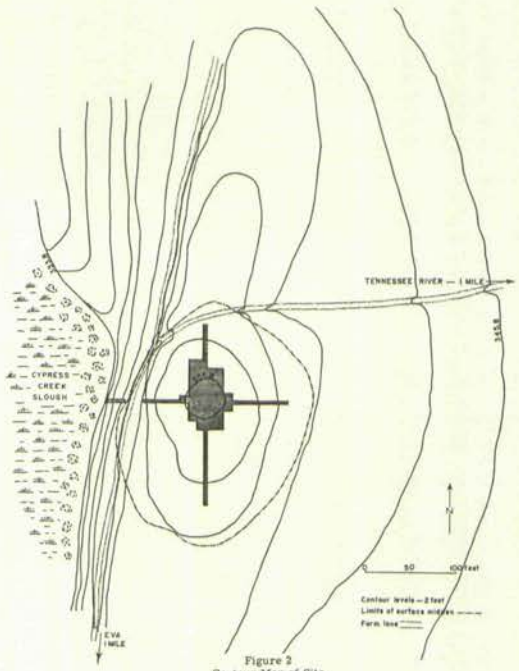


Figure 2
Contour Map of Site
xiv

Figure 2 Contour map of the Eva site. (Figure 2 taken from EVA An Archaic Site by T.M.N. Lewis and Madeline Kneberg, page xiv)

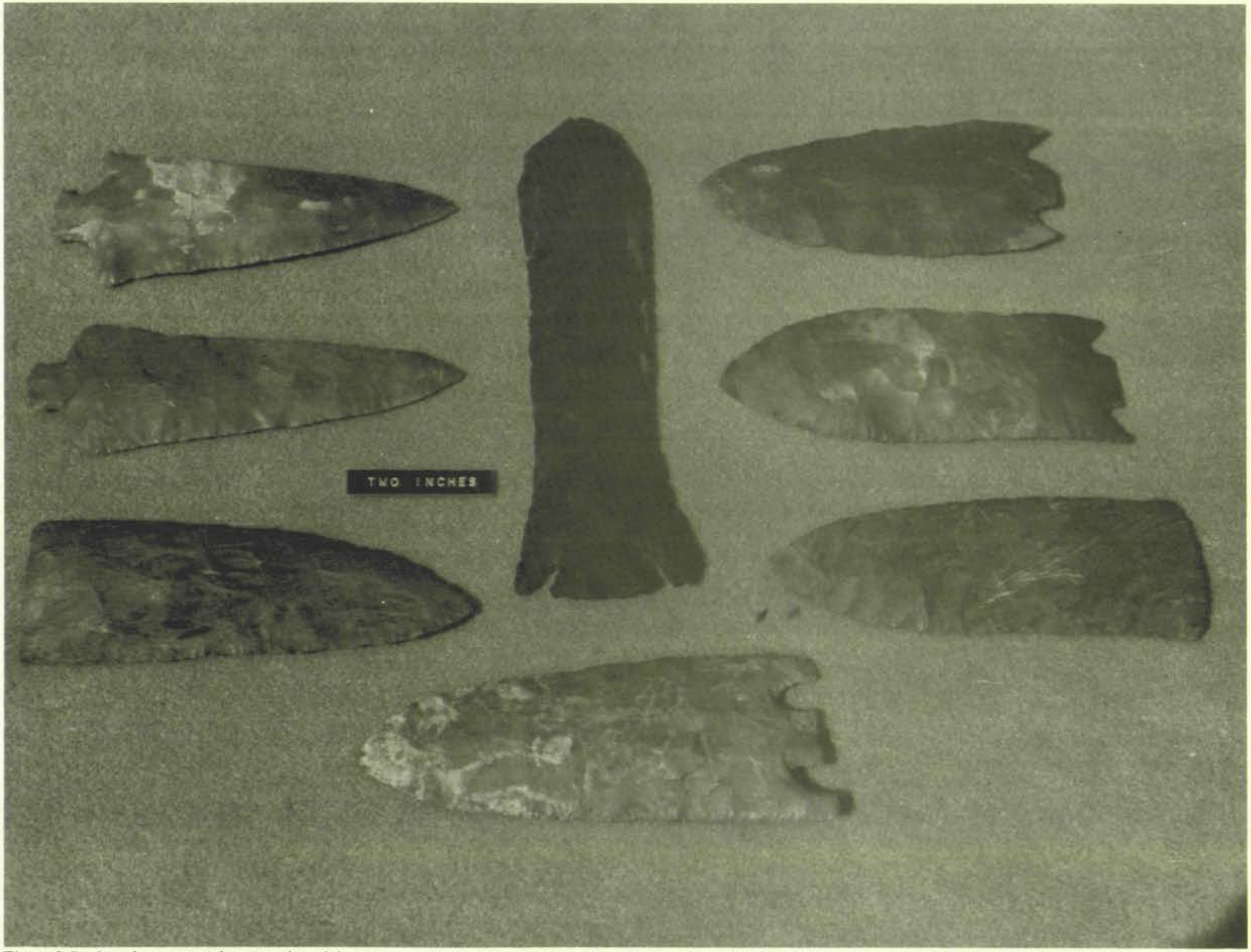


Figure 3 Cache of ceremonial points found by Herman F. Smith and his wife washing from the lake bottom near the Eva site on November 25, 1965. Former Porter Womac Collection, Galatin, Tennessee, Former Bill Brown Collection, Newman, Georgia, Collection of Kevin Pipes, Sevierville, Tennessee.

A Rare Unfinished Notched Ovate from Delaware County

By Sara Schaaf, Sunbury, Ohio

As I was cooking lunch one day, my husband Brad came rushing into the house holding his hand. As he ran past me I noticed a strange look on his face and I first thought that he had cut himself. I hurried to the bathroom only to find him grinning and nolding the unfinished notched ovate, washed and dripping in his hands.

This unusual piece was found when he was tearing out part of the original foundation of our house—it had been built in and cemented with the rest of foundation stones. Since this was an inner wall supporting beams, this artifact had to have been placed there when the original house was built between 1830 and 1840.

One can only conjecture whether the builder placed it there because of a lack of knowledge as to what it was, a lack of interest, or perhaps disappointment in its broken and unfinished condition. Whatever the reason, I am thankful I was home when he found it—he might have torn down the rest of the house looking for more pieces.

Fig. 1 (Schaaf) Notched ovate found by Bradley Schaaf in the foundation of his house.

Out of Place Point

By John R. Heath, Box 82, Sullivan, Ohio.

Pictured in Fig. 1 is the obverse and reverse of a point which was a personal surface find from a small multi-component site near the Black River in Sullivan Twp., Ashland Co., Ohio.

This small thin point is the only one of its type in my collection and seems to be out of place in this area. Karl Schmidt describes large points similar to this which were found at the Crispin site in Burlington Co., New Jersey (Griffin 1952: 59). Pressure retouch is present on all edges of this point and it is well made. The material is a gray-tan chert similar to Delaware chert. There is no grinding on the base or stem. It is 2⅜ inches long and ⅝ inches wide.

Reference

Griffin, James B., Editor
Archaeology of the Eastern United States. University of Chicago, 1952

Fig. 1 (Heath) Unusual type point from Ashland County.

A Grooved Slate Pendant

By Don Casto, Lancaster, Ohio

The banded slate pendant shown in obverse and reverse is 4 9/16 inches long and was found in Willys Park, Toledo, Ohio. It has the Meuser catalogue number 2484/5.

In the Ohio Archaeologist Vol. 21, No. 1, Converse wrote an article entitled "Grooved Slate Pieces" in which he states that grooves cut into slate is a rarely encountered phenomenon observed almost exclusively on slate pendants and gorgets. He also says that grooves found on these pieces do not appear to be the result of tool sharpening. The edges of the grooves are often angular and acute and seem to have been cut with a sharp instrument.

The grooves in my pendant are quite similar to those described by Converse. This pendant is grooved on both faces with the longest groove (Fig. 1) running from the narrow end down through the hole and is 2½ inches long. The groove on the opposite face (Fig. 1) also runs from the narrow end and is 1⅜ inches long. As is usual with much of this grooving, it seems to be somewhat oblique from the upper right to the lower left as though done by a right handed person.

Reference

Converse, Robert N.,
Grooved Slate Pieces, Ohio Archaeologist, Vol. 21, No. 1, Columbus 1971.

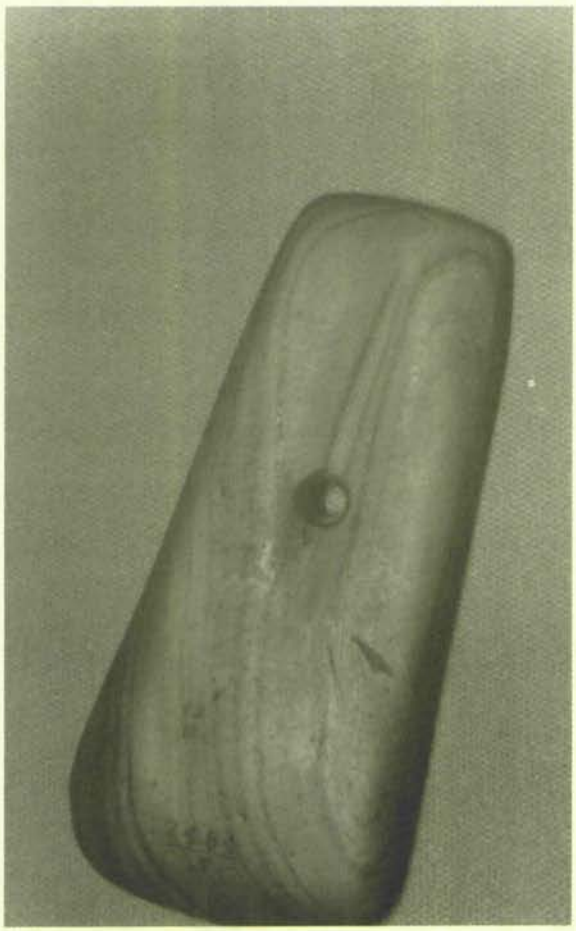


Fig. 1 (Casto) Obverse of grooved slate pendant

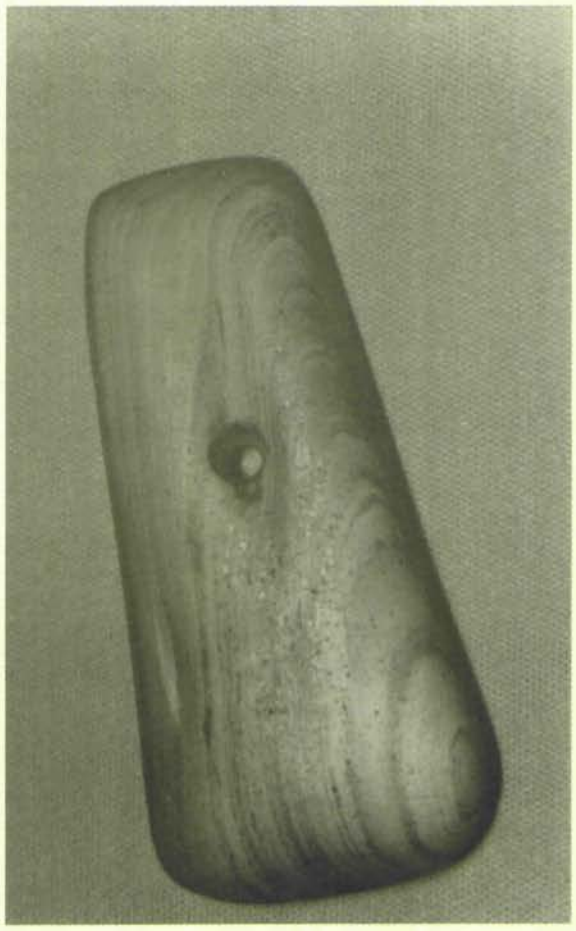


Fig. 2 (Casto) Reverse side of pendant. Note how grooves transverse hole.

Two Additional Examples of Late Mississippian Sculpture

By D. R. Gehlbach, 3435 Sciotangy Dr., Columbus, Ohio

The two Mississippian effigy pipes shown in the accompanying photographs are part of a family of similar examples found in many parts of Ohio. The writer has documented around 120 examples from various sections of the state. The heaviest concentration has been recovered from the southwestern part of an area roughly bounded by the Scioto River on the east and Interstate 70 to the north.

Most of these effigies are carved from blocks of Waverly sandstone and feature individual stylization with only vague representation of the effigy. The pipes illustrated with this article portray an amphibian—probably a frog, and a deer head which is a primary subject for these sculptures.

Based on evidence found thus far, it appears that the Mississippian peoples left these pipes among their every day trappings—remains of which have been dated from 1200 AD to 1600 AD. Mississippian effigy pipes are a distinctive and rare insight into the late prehistoric period in Ohio.

Fig. 1 (Gehlbach) Late Mississippian frog effigy pipe from Pickaway County, Ohio

Fig. 2 (Gehlbach) Late Mississippian deer head effigy pipe from Tuscarawas County, Ohio

Hafted Uniface Scraper

By Dick Lemaster, 200 Helen Road, SW, Pataskala, Ohio

This artifact was found May 18, 1981, in southwestern Licking County while surface hunting a small field which had not been cultivated in the last twenty years. I found several nice artifacts on my first hunt including this black hafted scraper.

Like nearly all hafted scrapers, this one is made on a uniface blade. The only secondary chipping on the flat side is around the base and notches, the balance being completely unchipped. The opposite side has fine pressure chipping over its entire surface. This piece differs from the majority of hafted scrapers in that both the right and left working edges are sharpened and even the tip is worked into a sort of end scraper. It is rather long for this tool type and measures 3⅜ inches in length and 1 7/16 inches wide. The material is a dense black flint of Upper Mercer origin possibly from the Zaleski deposits.

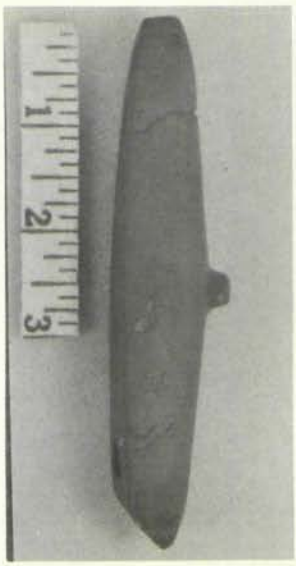
Fig. 1 (Lemaster) Obverse side showing fine secondary chipping.

Fig. 2 (Lemaster) Reverse uniface side of hafted scraper

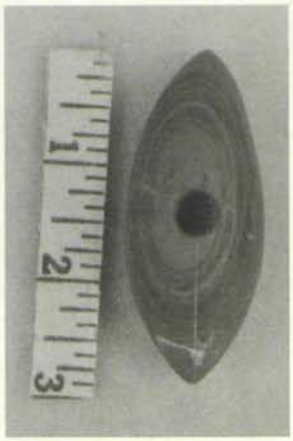
May Meeting Awards

Winners of best site display.
Larry R. Lowe, South Point, Ohio and Timothy M. Selb, Ironton, Ohio. Ohio River Fort Ancient site.

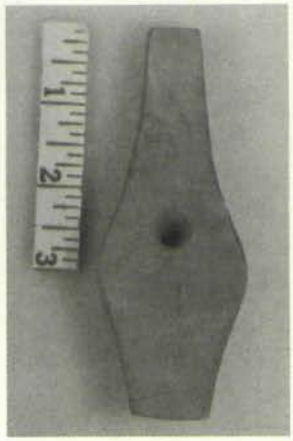
Best Slate Find



1st place—Hancock Co.
Greg Shipley
261 Sonander Rd.
Urbana, Ohio



2nd place
Robert J. Burns
439 Center St.
Kenton, Ohio

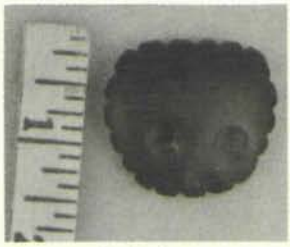


3rd place
Dave Untied
605 Adam St.
Dresden, Ohio

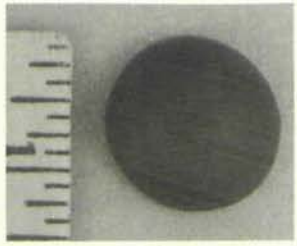
3rd place
Jim Wyant
1900 S. Sycamore Rd.
Mt. Vernon, Ohio

Best Ceremonial Find

1st place
Billy Hillen
Box 322
New Marshfield, Ohio



2nd place
John Henry
1004 S. 5th St.
Ironton, Ohio

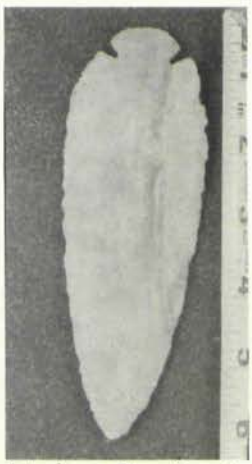


3rd place
Matthew Davis
818 N. Park St.
Columbus, Ohio

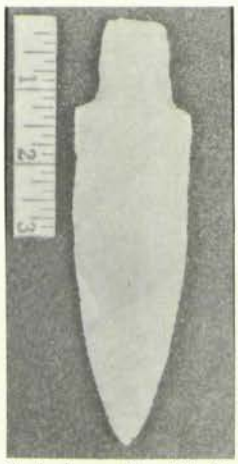
Best Stone Find

2nd place
Dean W. Johnson
43 Resch St.
Kenton, Ohio

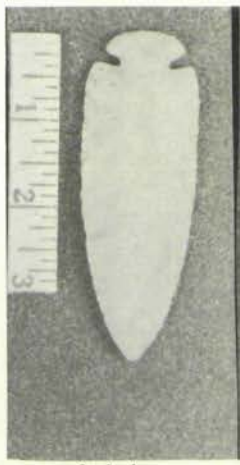
Best Flint Finds



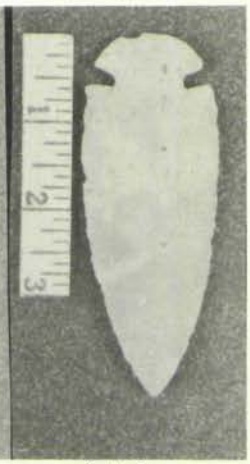
1st place—Perry County
Lee R. Hall
7201 Canyon Rd.
Hebron, Ohio



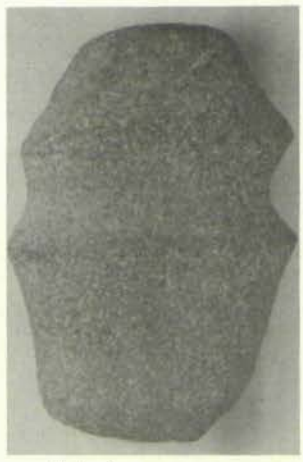
2nd place—Franklin Co.
John Shaeffer
2981 Woodloop Lane
Columbus, Ohio



3rd place
Donald Shuster
Rt.1
Blue Rock, Ohio



3rd place
Terry Randall
8787 Sparta Rd.
Fredericktown, Ohio



3rd place
John Schaeffer
2981 Woodloop Lane
Columbus, Ohio

Knives

By Robert N. Converse, Plain City, Ohio

Most collectors look somewhat askance at prehistoric flint knives unless they are exceedingly large or of outstanding workmanship. This lack of interest may be due to the fact that they have, for the most part, never been satisfactorily typed or dated. In addition, a piece which does not have notches seems to be less desirable to the average collector. However, it is in these familiar tools that one can find some of the most interesting and unique of all prehistoric flint work.

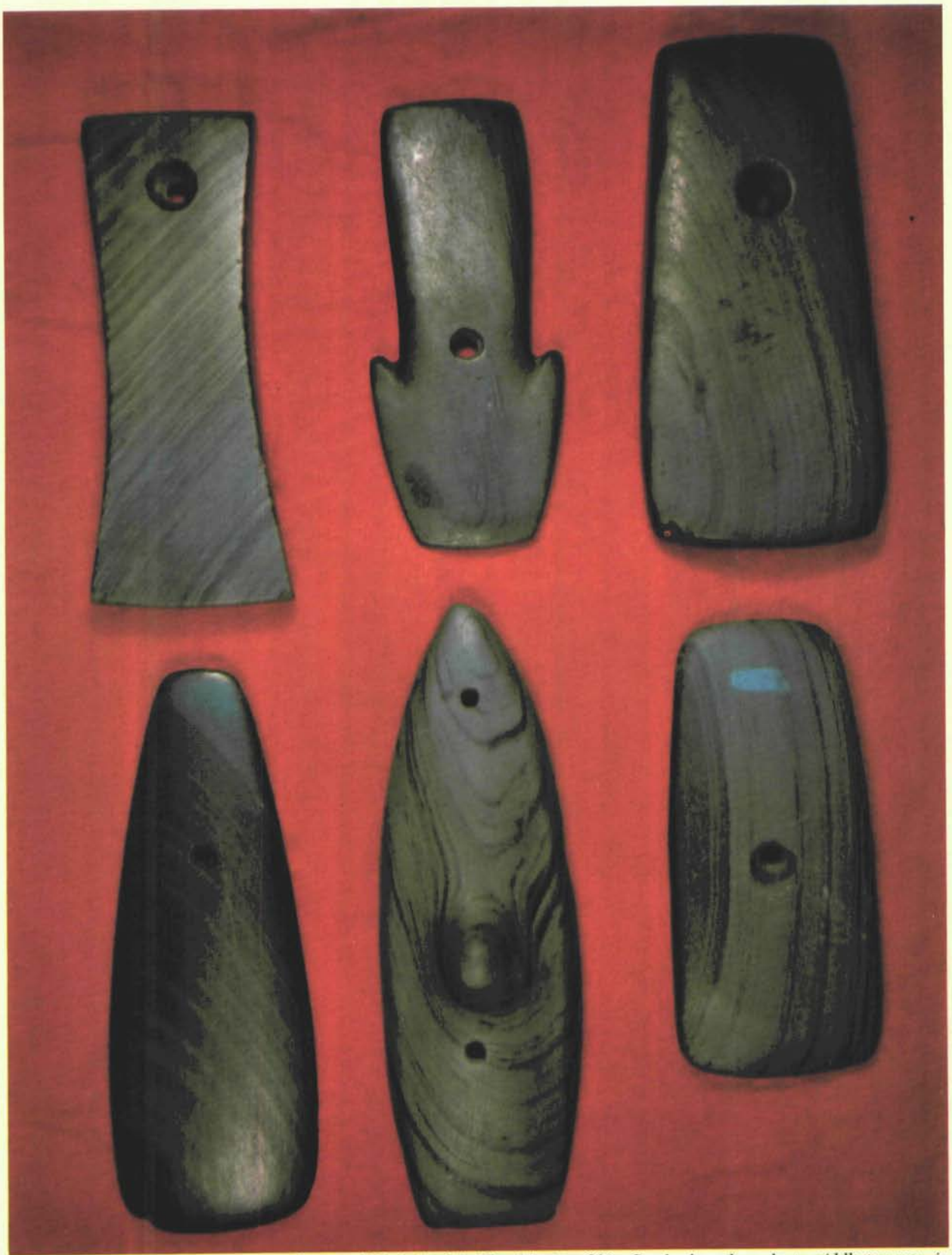
Knives are usually teardrop shaped bifaced implements seemingly used by nearly all cultures to a certain extent. So little is known about these common tools that no one can say with any certainty that a particular knife was used during any given period. There are of course exceptions. The rare paleo square knives with their unique square design and often fluted ends are easily recognized. The pentagonal shaped Fort Ancient with its square shoulders and angled blade is also easily discernible. Beyond these two, however, are a plethora of bewildering styles, variations and chipping characteristics which have thus far defied even the most astute students to categorize.

Even among professional ranks knives have drawn little or no attention. Few of the old reports describe or illustrate knives and not many of todays papers contain anything diagnostic about them. In fact it is probable that some archaeologists who are not familiar with flintwork would have difficulty describing these tools as knives.

Despite anybody of knowledge or interest in knives, a number of things are known about them. That they were used in the hand is hardly disputable. A great many of them are sharpened on one edge of the blade only, the opposite side being less delicately chipped and often dulled or ground. On some even the wide proximal end is well chipped and sharp and in fact may have been used much in the manner of a celt. Many of them are carlessly chipped except on the working or cutting edge where a delicate retouch is present. Beveling is not at all uncommon, this being the result of continuous resharpening such as is found on many of their hafted counterparts. All told, there may be as many as a dozen or more distinct types or styles which can only be defined by future research.

Any and all flint deposits, both within and without Ohio, were sources of material for knives, but a preponderance is of local flint or chert. Flint Ridge flint is represented in almost every type it seems, but is not by any degree abundant. Colorful flint from Flint Ridge is especially scarce, the bulk of it being the well known bluish white chalcedony.

In the accompanying photograph are a variety of knives. The knife in the center of the top row is of high quality Carter Cave flint while the balance are all of colorful Flint Ridge flint. As may be seen, a variety of types is shown along with a wide variation in chipping techniques. Authors collection.



High quality banded slate from the collection of S. A. Redick, Worthington, Ohio. Spade-shaped pendant, middle top row, is Hopewell. Humped gorget, bottom row, center, is Glacial Kame. Pendant upper left is Adena.

Variations of Upper Mercer Coshocton flint.

These six fine pieces show some of the rarer color combinations of flint from the Coshocton deposits. Quite often these pieces display a wide degree of color and quality in the same artifact.

Pentagonal Points

By Robert N. Converse, Plain City, Ohio

Of all the wide variety of Ohio flint types one of the most pleasing is the pentagonal point. This easily defined point type is ubiquitous in Ohio but its distribution seems to thin out in areas away from our state. Even though it is found in many farm collections, it still is not considered abundant since in nearly all areas of Ohio it seldom occurs in large numbers on any given site. Only in west central Ohio in the Miami drainage can concentrations be found, these being on small isolated locations.

One of the most remarkable characteristics of this point is the frequent use of high quality, colorful, and often exotic Flint Ridge flint. Some of the rarest combinations of hues and colors may be found in a single point and the use of jewel quality flint from Flint Ridge is not unusual. A more subtle aspect, however, regarding the employment of Flint Ridge material is that rarely will the milky blue chalcedony, the most widely used and predominate of all grades of flint from those deposits, be found in this point. In contrast to the many point types made of Flint Ridge flint, pentagonals are often made of the striped pink and gray or pink and black non-translucent stone from the northeastern part of the Ridge. This variety of flint at times displays some of the most startlingly contrasting and variegated stone to be found at Flint Ridge.

Despite the preference by the pentagonal flint knapper for colorful flint, he still used other Ohio flints and cherts for his points. Black Upper Mercer materials are not that uncommon, and local sources, such as Delaware chert, were also used. Along the Miami rivers in western Ohio, nearly all pentagonals are made of Cedarville-Guelph stone which is called Logan County chert by collectors. It is only in this area, as noted above, that sites which produce pentagonal points in concentrations may be found. Oddly, these Miami pentagonals rarely include Flint Ridge examples or even large classic specimens of any stone. Another oddity, when considering sources of flint, is the non-use of extraneous flint such as Indiana hornstone, Indiana green or Carter Cave flint. Very rarely are any of these flints found in any pentagonal and I don't recall ever having seen a large classic specimen made of Indiana hornstone for example.

There is a size variation from small one inch points to some which may exceed four inches, but longer examples are rare. In outline they, of course, are five-sided or pentagonal in design. Classic examples have blade sides which are parallel for about half the length where they abruptly angle toward the tip. Occasionally there is a small barb or projection at the juncture of these angles. A number of them are asymmetric or seemingly lopsided, but this design is intentional and deliberate and not the result of resharpening. The chipping treatment is well executed and the corners of the barbs are usually rounded rather than pointed as are the corners of the base. In cross section they are generally rounded and they don't often show large percussion flake scars. Not all of the smaller examples have the acutely pentagonal outline.

Aside from their other unusual attributes, there are a number of hafted scrapers found in Ohio which appear to be resharpened pentagonals. They have the same basal treatment and the same abundance of Flint Ridge flint. In the Miami area these same scrapers are found—invariably made of Logan County chert. This apparent re-use of broken points may give a clue to the age of the pentagonal since its time period has never been satisfactorily established (the name Early Woodland point attached to the smaller examples is unfortunate and wrong). Hafted scrapers made in the Archaic are always chipped from one side only, this in contrast to Woodland examples which are sharpened from both sides. This trait, taken in combination with the other chipping techniques, leads to the conclusion that they originate somewhere in the Archaic.

Unusual Relics From Adams County

Stephen Kelley
P.O. Box #1
Seaman, Ohio 45679

Figure 1 illustrates two interesting and somewhat unusual artifacts in the author's collection. They were identified a few years ago by archaeologist Rodney Riggs (formerly of the Cincinnati Museum of Natural History) as shredders. Easily recognized by their jagged, sharp edges, both pieces were found on multi-component sites in Adams County, Ohio. The shredder on the left is made of unidentified chert and shows evidence of burning. It was found on Indian Bottom on the West Fork of Ohio Brush Creek in Scott Township by the author. The shredder on the right is made of Brassfield Flint and was discovered near the village of Rome on the Ohio River in Green Township. For size, the specimen on the right measure 2 and 3/16 inches in length. length.

Figure 2 exhibits an unusual hafted scraper. Found by the author in 1968, the scraper appears to have been made from a reworked Middle Woodland point. It has been manufactured from black Upper Mercer flint and measures 1 inch in length and 5/16 inches in width. The unusual feature is the well worked notch in the center of the scraping edge. The scraper was found on a multi-component site on the West Fork of Ohio Brush Creek, Scott Township, Adams County, Ohio.

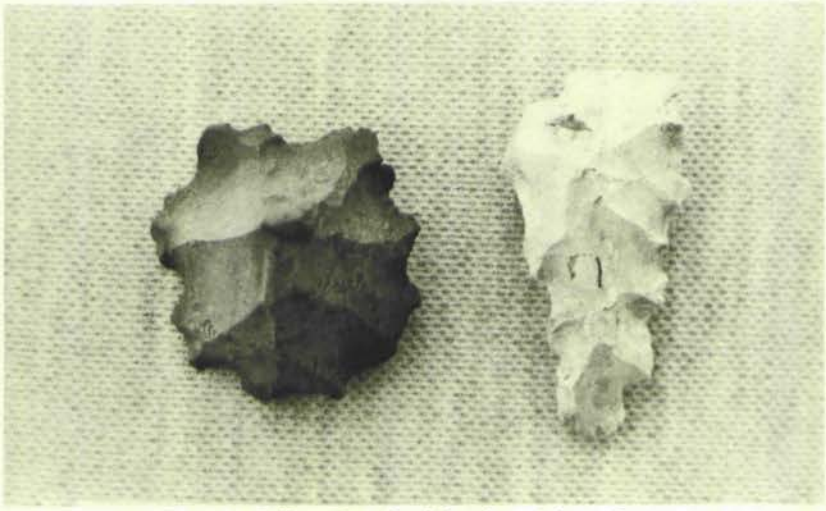


Figure 1 (Kelley) Two shredders from Adams County.

Figure 2 (Kelley) Notched hafted scraper from Adams County.

Variations in Shape and Composition of Some Prehistoric Ohio Pestles

by
Robert W. Morris
Department of Geology
Wittenberg University
Springfield, Ohio

As reported by Converse (1973:12), the majority of Ohio stone pestles (excluding roller pestles) belong to either of two basic types: the more common bell pestle or the conical pestle. His illustrations and discussion indicate that a number of variations of these two types occur. The main purpose of this study was to examine a number of prehistoric Ohio pestles and attempt to recognize the varieties which exist, as well as any trends in shape, size, and rock (lithic) composition of these varieties. Only bell, conical, and cylindrical pestles from the authors collection were surveyed; roller pestles were not included.

A total of 59 pestles from eleven counties in Ohio were studied. Twenty (34%) came from Clark County, fourteen (24%) from Champaign County, seven from Ross County, four from Vinton County, and the remainder from Highland, Fayette, Warren, Clinton, Lawrence, Gallia, and Richland Counties. Approximately 36 (63%) of the pestles represented variations of the bell pestle, while 21 (36%) were conical varieties. Two were classified as cylindrical pestles. This study covers most of the common pestle varieties which occur in Ohio; however, some of the rarer types are probably not represented. Brief descriptions of these varieties, as well as outline drawings (Fig. 1), and photographs are included. Measurements and data concerning rock composition of the pestle varieties studied is presented in Table 1.

Bell Pestles

Most bell pestles possess the following characteristics: a smooth rounded poll on a handle which expands or flares outward toward the base; a circular cross-section through the poll or handle; usually a rounded peripheral edge on the base; a shallow concavity (depression) on the base may or may not be present; and usually a fine degree of workmanship and often a smoothly polished surface. Fewer numbers of bell pestles have a flat poll. Most bell pestles, 75% of the 36 studied, have a rounded poll, whereas only 9 (25%) had a flat poll. Converse (1973:24) and others interpret bell pestles to range in age from Archaic into later culture periods. In this study, seven variations of the bell pestle were recognized.

1. *Regular flare, rounded poll*—this variety has the characteristics of a normal bell pestle, but has only a small to moderate degree of flare and is of short to moderate height (Fig. 1, A-F & Fig. 3). McGraw (1973:18) figures a Hopewell pestle of this type.
2. *Wide flare, rounded poll*—very similar to the regular flare bell pestle, but differs in having a pronounced wide degree of flaring at the base (Fig. 1, G-K & Fig. 2). The diameter of the base is usually large (3.5 inch average).
3. *Tall handle, rounded poll*—similar to the regular flare variety, but differs in having a taller, more slender handle relative to the basal diameter. The height of this pestle type averages 5¼ inches, whereas the amount of basal flaring remains small to moderate. (Fig. 1, L-N; Fig. 3).
4. *Slight flare, flat poll*—this variety has a flat poll and flares only slightly at the base (Fig. 1, R-S; Fig. 4).
5. *Wide flare, flat poll*—this variety has a typical wide flare shape, flat poll, and the peripheral edge of the base is flattened, not rounded. No flaring of the poll (Fig. 1,Q).
6. *Flared poll, flat poll*—has the classic shape of a flared bell pestle, but possesses a flat poll which itself flares slightly to strongly outward. Specimens studied show a high degree of workmanship, polished surface, and had shallow concavities on the base (Fig. 1, O-P; Fig. 5). Collins (1959:17) illustrates an Archaic bell pestle of this type from Miami County, Ohio. Another excellent specimen of this type, also from Miami County, is figured in *Artifacts* (1980: vol. 10, n. 3, p. 76).
7. *Bottleneck base, flat poll*—this variety possesses a cylindrical handle and flat poll; however differs from the normal flared bell pestle in having a convex outward bulge toward the base of the handle which gives it a "bottleneck" appearance. This results in the base being thicker and heavier than most bell

pestles. This type may also possess a slightly flared poll (Fig. 1, T-U; Fig. 5).

Conical Pestles

As the name indicates, most pestles of this type have a general cone or domal shape. Converse (1973:12) reports that conical pestles are Archaic in age, are commonly crudely made and show little of the quality workmanship of other pestle types. Most taper from a broad flat or slightly rounded base toward the poll which is usually rounded or pointed. Less commonly, the poll may be flattened. The major feature of the conical pestle is the lack of flaring of the handle toward the base. Conical pestle varieties range from well formed, cone-shaped types to crude varieties which seem to be little more than oblong cobbles that have had a flat base worn across one end. Five varieties were recognized in this study.

1. *Cone shape, rounded poll*—this variety has a smoothly rounded poll expanding in diameter gradually toward the base and remaining constant to the basal periphery. Specimens generally resemble a bullet with no flare toward the base; however, a single specimen did show a very slight flare at the basal periphery. All have a circular cross-section and smooth surface (Fig. 1, V-X; Fig. 6).
2. *Dome shape, rounded poll*—very similar to the cone shape variety, but differs in having a more broadly rounded, dome-like poll which doesn't taper as much as the cone type (Fig. 1, Y).
3. *Cone shape, flat poll*—this variety has smooth straight sides which taper from the basal periphery toward the poll which is flat. Circular in cross-section, it has no flare (Fig. 1, D'-E').
4. *Crude stubby shape, rounded poll*—short stubby pestles with a somewhat irregular cross-section and no flare. Most have a rounded poll and average 3.1 inches in height. Many show crude workmanship or irregularities and may have been smooth cobbles on which a flat base has been abraded (Fig. 1, F'-H'; Fig. 7).
5. *Crude cone shape, pointed poll*—a larger crude variety distinguished by a poll which forms a rounded point and expands in diameter to form a heavy broad base. It has a nearly circular cross-section and was crudely fashioned from a smooth cobble of metamorphic or igneous rock. Larger than the stubby variety, it averages about 4.3 inches in height (Fig. 1, Z-C'; Fig. 8).

Cylindrical Pestles

This type is far less common than the bell and conical pestles, although one might consider it a variety of conical pestle. It is characterized by its overall cylindrical form from poll to base. The sides are nearly parallel and the cross-sectional diameter remains nearly constant from poll to base. The surface is fairly smooth and there is a slight taper toward the gently rounded poll (Fig. 1, I'-J'; Fig. 4).

An interesting feature of some pestles, especially bell pestles, is the presence of a circular depression or "pitted concavity" (Converse, 1973:12) on the basal surface. Miles (1963:69) cites this worn depression (cup), as well as chips knocked off the edge of the base, as good evidence of the pestles use as a pounding tool. He maintains that "bell pestles" and other monolithic pestle-like implements were used more as hammers and thus should properly be referred to as hand mauls. In addition to pounding food materials, Miles feels these hand mauls were commonly used to pound and drive chisels, stakes, and wedges. For example, Miles (1963:75) illustrates hand mauls (pestles) used by Pacific Coast Indians well into historic times to drive stakes for their fish weirs along northern California streams. In all probability, stone pestles were used for a variety of purposes; however, a major use would seem to be for grinding and crushing food materials. Potter (1968:17) believes that Archaic peoples used bell-shaped and cylindrical pestles for grinding plant foods such as nuts, seeds, roots, and berries, whereas McGraw (1973:20) feels that Hopewell Indians used pestles to grind flint corn into meal.

Analysis of the pestles examined in this study revealed three types of basal surfaces: 1) a smooth flat base having a distinct depression (concavity) present; 2) a plain, smooth flat base, sometimes slightly irregular; and 3) a smoothly rounded base having a convex outward surface. This latter type, as well as the smooth flat base, gives strong supporting evidence for grinding-type activity. Of the 36 bell pestles studied, 17 (47%) possessed a base with a depression; whereas only 2 (9%) of the 21 conical pestles had a base with a concavity (Table 2). The majority of conical pestles (67%) had a plain flat base, while 36% of the bell pestles also has a flat base. Fewer of both types had convex bases.

Another interesting feature relating to

pestles is the orientation of the handle with regard to the base. Converse (1973:24) reports that many bell pestles possess a handle which is not perpendicular to the base, but rather at an angle of about 20°. A range of handle orientations from perpendicular to various angles to the base were found in this study. Fifteen (42%) of the bell pestles and 9 (43%) of the conical pestles studied possessed handles perpendicular to the base; all others had handles oriented at some angle. Among bell pestles, those with rounded polls much more commonly have a perpendicular handle, than the flat poll types (Table 2). Most likely, original construction of the pestle and how it was held during use determine the overall handle orientation. The author feels that many pestles had a perpendicular handle originally. If they were held and used in a vertical position, the perpendicular handle would be retained. However, if the pestle was held by the user at an angle to the horizontal, then progressive grinding and wear along one basal edge would gradually produce a basal surface abraded at some angle to the handle axis. Similarly, changes in orientation of the pestle during use could also produce the rounded, convex outward, basal surface of some pestles.

A geological aspect of this study of particular interest to the author concerned the rock (lithic) composition of the pestles. Were certain types of rock selected and favored by Archaic and later Indians in the manufacture of various pestle types? General rock identifications were attempted for each pestle from surface analysis only. Some of these identifications are tentative due to the weathered exterior of many specimens. Also, without detailed petrographic or X-ray diffraction analysis, it is often quite difficult to precisely identify many varieties of crystalline rock. As one might expect, the majority of pestles, like many other stone tools (axes, celts, mauls, and hammerstones) were made of very hard varieties of igneous and metamorphic rock. The hardness and durability of these rocks in comparison to many softer sedimentary rocks, wood, bone, shells, and plant foods proved an important and useful quality. Virtually all pestles examined in this study were made from varieties of crystalline igneous or metamorphic rock, which are composed of intergrown crystals of various common silicate minerals. Approximately two-thirds of the bell pestles and one-half of the conical pestles were of igneous rock composition, especially diorite, diabase, granite, and some finely textured igneous rocks like felsite (Table 3). The remaining pestles were made of metamorphic rock, most commonly quartzite and gneiss. Quartzite, originally a sedimentary quartz sandstone which has been subjected to metamorphism, seems to have been the most commonly used metamorphic rock by Archaic and later prehistoric Indians of Ohio.

Because the state of Ohio is composed of surface and near surface sedimentary rock layers (limestones, dolomites, sandstones and shales) and lacks bedrock exposures of crystalline igneous and metamorphic rock at the surface, the source of these materials is an interesting question. The majority of Ohio pestles and similar tools composed of hard crystalline rock were most likely fashioned from glacial cobbles and rock fragments which occur scattered over three-quarters of Ohio. Several times during the Pleistocene (Ice Age) large continental glaciers advanced southward over most of Ohio (except for the southeastern portion) and as the ice melted, tremendous quantities of clay, silt, sand, gravel, and rock fragments of all sizes and types were left behind as various types of glacial deposits. By consulting the Glacial Map of Ohio (Goldthwait, White, and Forsyth: 1961) one can see the extensive distribution of these deposits across all of northern, western, and much of central Ohio. These glacial deposits contain an unbelieveable variety of crystalline, igneous and metamorphic rock fragments carried into this area from regions to the north, as well as local sedimentary bedrock materials. Prehistoric Ohio Indians no doubt collected cobbles of quartzite, diorite, granite, gneiss, and other suitable rock types from exposures of these glacial deposits, especially along rivers and streams, and used them as raw materials for the manufacture of many of their stone tools.

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TABLE 1

	PESTLE TYPE	Total # Spec.	Avg. Height (inches)	Height Range (inches)	Basal Diameter (Avg.)	Dominant Rock (Lithic) Composition
BELL PESTLES	Regular flare, rounded poll	10	4.3"	3.75"-4.75"	3.1"	60% were igneous rock, incl. diabase, granite, gabbro & felsite. Quartzite (2).
	Wide flare, rounded poll	9	4.5"	4"-5"	3.5"	Dominantly quartzite (4) and diabase (3) composition.
	Tall handle, rounded poll	8	5.25"	4.5"-6"	3"	87% were igneous rock, incl. diorite, gabbro, granite & felsite. Quartzite (1).
	Slight flare, flat poll	3	4.7"	4"-5.5"	2.9"	All specimens were of finely textured igneous rock, eg. felsite or andesite.
	Wide flare, flat poll	1	4"	4"	3.4"	Feldspathic quartzite (1).
	Flared poll, flat poll	3	5"	4.25"-5.9"	3.3"	Igneous: diabase (1), granite (1); Metamorphic: greenstone (1)
	Bottleneck base, flat poll	2	5"	4.75"-5.25"	3.2"	Both specimens were composed of quartzite.
CONICAL PESTLES	Cone shape, rounded poll	8	4.6"	3.5"-5.25"	2.8"	62% composed of quartzite; the remainder igneous rock (3).
	Dome shape, rounded poll	1	4"	4"	2.9"	Feldspathic quartzite (1).
	Cone shape, flat poll	2	3.75"	3.5"-4"	2.7"	Granite (1) & hornblende-rich gneiss (1).
	Crude stubby shape, rounded poll	4	3.1"	3"-3.25"	3.2"	All igneous rock: diorite(2), granite (2).
	Crude cone shape, pointed poll	6	4.3"	3.5"-5.5"	3.3"	50% were of metamorphic gneiss; the remainder of quartzite or igneous rock.
	Cylindrical Pestles	2	3.6"	3.5"-3.75"	2.4"	Both specimens were of finely crystalline quartzite.

TABLE 2

PESTLE TYPE	No. of specimens	Avg. Height (inches)	Basal Surface			Handle to Basal Surface
			Concavity present	Flat Surface	Convex Outward	
Bell Pestles with rounded poll	27	4.6"	11	10	6	13
Bell Pestles with flat poll	9	4.8"	6	3	0	2
Bell Pestles (TOTAL)	36	4.65"	17	13	6	15
Conical Pestles (TOTAL)	21	4.1"	2	14	5	9
Cylindrical Pestles	2	3.6"	0	1	1	1

TABLE 3

PESTLE TYPE	Total # Spec.	Igneous Rock				Metamorphic Rock		
		Granitic Rock	Diorite Diabase Gabbro	Felsite & Fine xline Rock	TOTAL IGN. ROCK	Quartzite	Gneiss	TOTAL META. ROCK
Bell Pestles with rounded poll	27	2	11	5	18	7	2	9
Bell Pestles with flat poll	9	1	1	4	6	3	—	3
Bell Pestles (TOTAL)	36	3	12	9	24	10	2	12
Conical Pestles (TOTAL)	21	5	4	1	10	7	4	11
Cylindrical Pestles	2	—	—	—	—	2	—	2

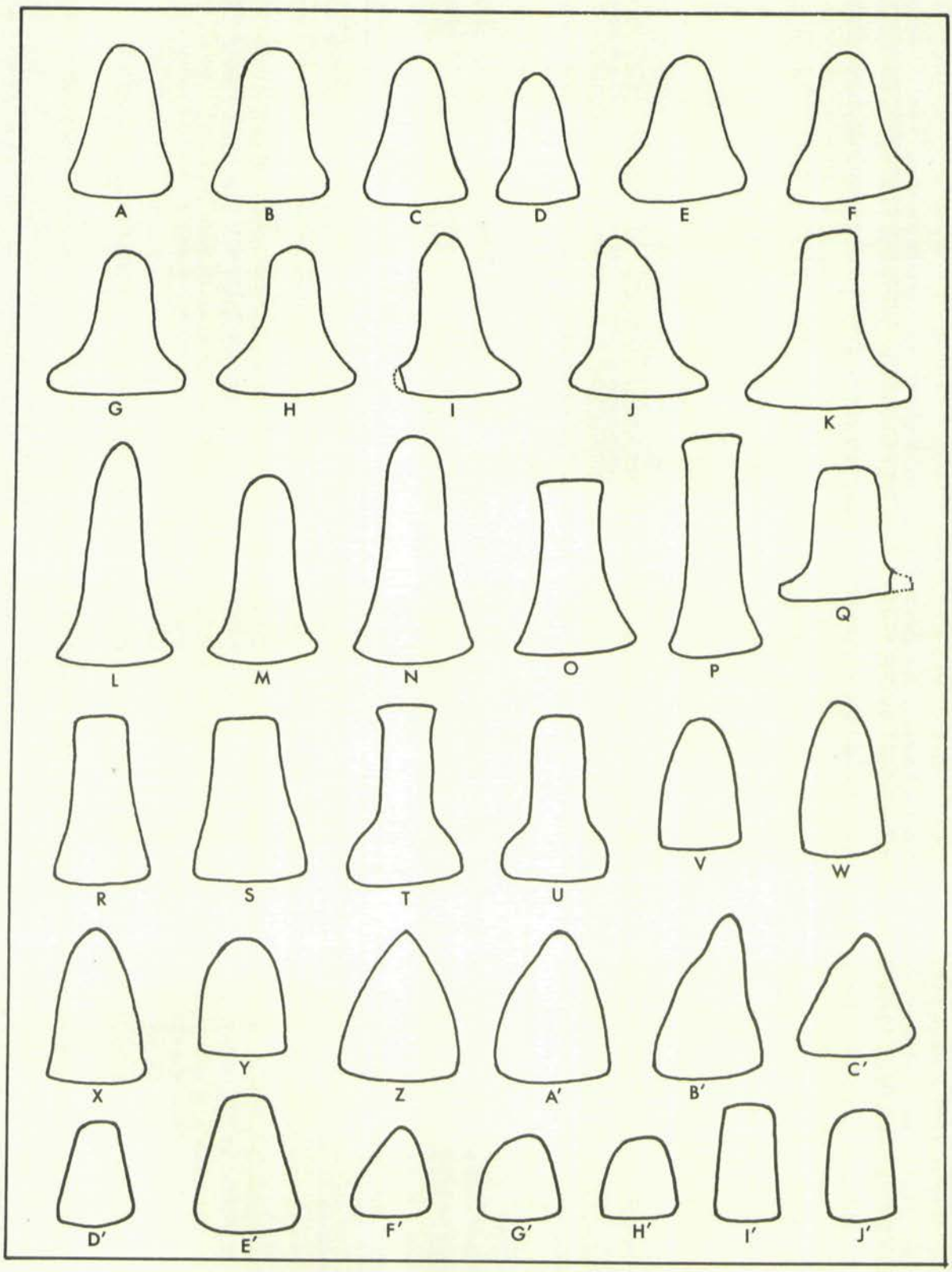

Fig. 1 (Morris) Outline drawings of common Ohio pestle types. The varieties of bell pestles illustrated are as follows: A-F, Regular flare, rounded poll; G-K, Wide flare, rounded poll; L-N, Tall handle, rounded poll; O-P, Flared poll, flat poll; Q, Wide flare, flat poll; R-S, Slight flare, flat poll; T-U, Bottleneck base, flat poll. The varieties of conical pestles illustrated are as follows: V-X, Cone shape, rounded poll; Y, Dome shape, rounded poll; Z-C', Crude cone shape, pointed poll; D'-E', Cone shape, flat poll; F'-H', Crude stubby shape, rounded poll. Cylindrical pestles illustrated are I' and J'.

Fig. 2 (Morris) Bell pestles of the wide flare, rounded poll variety. Both from Champaign County. Left, composed of quartzite; right, of diabase.

Fig. 3 (Morris) Bell pestles with a regular flare, rounded poll. Left, Fayette County, granite gneiss. Center, Clark County, fine textured igneous rock. Right, tall handle variety, Champaign County, diorite.

Fig. 4 (Morris) Left and Center, Bell pestles with a slight flare, flat poll. Both from Clark County and composed of fine textured igneous rock (felsite?). Right, Cylindrical pestle, Clark County, quartzite.

Fig. 5 (Morris) Bell pestles with a flat poll. Left, flared poll variety, Clark County, diabase. Right, bottleneck base variety, Champaign County, quartzite.

Fig. 6 (Morris) Conical pestles of the cone shape, rounded poll variety. Left, Clark County, gabbro. Center, Highland County, felsite. Right, Warren County, quartzite.

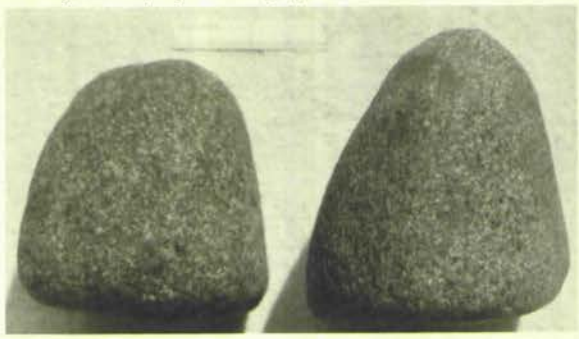

Fig. 7 (Morris) Conical pestles: crude stubby variety with rounded poll. Both are from Vinton County and are composed of diorite.

Fig. 8 (Morris) Conical pestles: crude cone shape with pointed poll. Left, Highland County, quartzite. Right, Clark County, possibly syenite.

Radiocarbon Dates From The Brokaw Site

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Part I
Introduction

Beginning in 1974 a preliminary report on the Brokaw site (33-B1-6) was initiated in the *Ohio Archaeologist.* Since that time, other articles have followed in which specific topics have been discussed (1976, 1978, 1979, 1980, 1981). Similarly, the focus of this paper will be the radiocarbon dates received for the site. In view of the anticipated length of the report, however, it will be published in two parts. Thus, Part I, appearing below, will be concerned with describing each of the samples collected and the feature in which it was found, the feature type, associated artifacts, dating laboratory, radiocarbon dates, and a brief comment regarding the dates. Part II, which will be presented in a subsequent edition of the journal, will focus on a discussion and interpretation of the dates.

Prior to considering the samples, though, a word is in order concerning the physical environment from which they were collected and their dating. Regarding the former, the Brokaw site is located on a hilltop fully exposed to the elements and it is reasonable to assume that the site was covered with vegetation from the time of the last prehistoric occupation until its clearing for cultivation. Since then, the field has been planted in corn, wheat, and alfalfa on a rotating basis. Hence, the opportunity for root contamination has been long and continuous. This is particularly true in as much as many of the specimens recovered have been from features immediately underlying the plowzone.

In all, twelve charcoal samples, involving four radiocarbon dating laboratories, have been dated. Such a high number of dates, in view of the expense, was deemed necessary in order to firmly anchor the site in time. In three instances, however, two specimens from the same feature were submitted to two laboratories in an attempt to cross-check the dates. The four radiocarbon dating laboratories are: (1) The Institute for Physical and Chemical Research, Saitama, Japan, (2) Dicar Corporation Radioisotope Laboratory, Cleveland, Ohio, (3) the Temple University Radiocarbon Dating Laboratory, Philadelphia, Pennsylvania, and (4) the Center for Applied Isotope Studies, University of Georgia, Athens, Georgia. All twelve specimens were woodfire charcoal. The author would like to dedicate this article to Miss Sylvia Mozie as an expression of appreciation for having given so freely of her time and untiring assistance in excavating the Brokaw site. The samples in order of their excavation, are as follows.

SAMPLE 1: The charcoal sample collected from the eastern edge of excavation unit D-16 was recovered from the 25 centimeter level in a sandstone hearth. The specimen, a fragment of a tree limb, was approximately 15 centimeters long and 3 centimeters in diameter. Sample D-16, TEM-168 (12 grams), has been radiocarbon dated to 720±100 B.P. (A.D. 1230±100) by the Radiocarbon Dating Laboratory of Temple University. It is estimated, nevertheless, that this date may be too early by a full century, if not more.

This specimen was associated with the fire-cracked sandstone hearth located primarily in the southwestern sector of the 5-foot square at the 20 to 30 centimeter level. Noted in the hearth were 1 Monongahela Cordmarked, cord-wrapped-stick-impressed lip (Dragoo, 1955:101-102) rim sherd, bone fragments, shell-tempered ceramics, freshwater mollusc, and an antler tine projectile point. In the 30 to 40 centimeter level of the unit, only a piece or two of fire-cracked rock, shell-tempered pottery, river pebble chert, coal, several bones, and a grit-tempered rim sherd were reported, although many flecks of charcoal were present. Clearly, the presence of the Monongahela Cordmarked rim sherd, shell-tempered ceramics, and river pebble chert would indicate a Late Woodland cultural occupation. Numerous snail shells, conceivably representing later arrivals (Evans, 1972), were also noted.

SAMPLE 2: This specimen was recovered from a concentration of charcoal at the 25 to 30 centimeter level in a large sandstone fireplace in the eastern sector of excavation unit D-14. The sample, TEM-167 (14 grams), has been radiometric dated by the Radiocarbon Dating Laboratory of Temple University to 530±120 B.P. (A.D. 1420±120). This date, all things considered, would seem to be entirely satisfactory.

The hearth, which appeared immediately below the plowzone and extended to the sterile clay and sandstone subsurface at the

25 centimeter level, had a maximum diameter of approximately 120 centimeters. Its size, though, can only be roughly estimated, for it extended into three adjacent unexcavated 5-foot squares. Archaeological remains in association with the specimen were animal bones, river pebble chert, shell-tempered pottery, freshwater mollusc, snails (naiads), and a crude looking corner notched projectile point reminiscent of the Chesser Notched type (Prufer, 1967:21-22). The projectile point, ceramics, and river pebble chert would clearly identify the sample as being of Late Woodland origins. This conclusion is supported by the recovery of additional shell-tempered ceramics which underlay the specimen at the 30 to 35 centimeter level of the fireplace.

SAMPLES 3 & 4: Two charcoal samples were taken from the remains of a large woodfire hearth which appeared between the base of the plowzone and the sterile clay and sandstone subsurface at the 25 centimeter level of excavation unit 31-K (and three adjacent unexcavated 5-foot squares). One specimen, N-3482 (14 grams), was collected from a small concentration of charcoal 22 to 23 centimeters below the soil surface. The second, TEM-169 (11 grams), was recovered from the 21 to 25 centimeter level from various locations of the hearth and was profusely intermixed with the loam soil. N-3482, assayed by The Institute for Physical and Chemical Research, has been radiocarbon dated at 525±75 B.P. (A.D. 1425±75) and TEM-169, tested by the Temple University Radiocarbon Dating Laboratory, dates to 620±70 B.P. (A.D. 1330±70). This is a difference of 95 years, which seems acceptable, although the former may be more accurate.

No artifacts occured in direct association; however, 3 chips of Flint Ridge flint, 29 flakes of river pebble chert, and 2 nonshell-tempered sherds were present in the overlying plowzone. These materials, in conjunction with those recovered from the 32-40-K series, were initially interpreted as evidence for a Middle and Late Woodland occupation of the site. Nevertheless, as is readily apparent, the radiocarbon dates simply do not support the contention of a Middle Woodland habitation.

SAMPLES 5 & 6: Two additional charcoal samples were taken from a fireplace located on the bottom of a roughly circular pit in excavation units 27-28-U-V. The first specimen, DIC-392 (15 grams), was composed of a small concentration of five pieces of charcoal 55 centimeters below the soil surface. The second sample, N-3481 (12 grams), was taken from various points in the hearth between the 50 to 55 centimeter level of the pit. DIC-392, submitted to the Dicar Corporation Radioisotope Laboratory, has been dated to 740±55 B.P. (A.D. 1210±55), while N-3481, dated by The Institute for Physical and Chemical Research, dates to 505±75 B.P. (A.D.1445 ±75). Thus, a difference of 235 years. It is suggested that the Dicar date is perhaps a century or more too early given the consistency of The Institute's dates and the fact that maize of the Northern Flint complex of races has been recovered from the site (McK. Bird and Pickenpaugh, 1980:31).

Regarding the pit, it had obviously been excavated, for the walls were nearly vertical halfway around it and sloped in steeply around much of the remainder, except along the west side. Maximum pit depth was approximately 30 centimeters and the diameter 80. The ground on which the hearth rested was heavily burned and discolored and a considerable amount of ash and charcoal were intermixed with the soil. Three small pieces of fire-cracked sandstone were noted in the hearth; however, due to their small size and location, they do not appear to have served any function. The fireplace contained 1 Monongahela Cordmarked, cord-wrapped-stick-impressed lip rim sherd, 2 debitage chert flakes (one, evidencing exposure to high temperatures, is of Flint Ridge origin, while the other appears to be a local material), 2 shell-tempered sherds (1 cordmarked and 1 plain), 71 bones, and 3 snails. Fifty-four of the bones exhibited extensive charring. Discernible animal types are deer and bird. The hearth was apparently used over a considerable duration of time, because great quantities of ash and charcoal were present from a depth of 39 centimeters to the bottom and the soil displayed evidence of discoloration due to heat.

Overlying the hearth, but confined to the eastern sector of unit 28-U, was a second smaller fireplace composed of 8 pieces of sandstone of various sizes laid so that the flat surfaces were uppermost. The diameter of the near circular fireplace at the 25 centimeter level was 30 centimeters, while the underlying soil was heat discolored for a thickness of 3. Recovered from the hearth were 4 gray river pebble chert flakes, 14 shell-tempered sherds (9 cordmarked and 5 too small to identify), 66 pieces of bone and several snails. Twenty bones exhibit various degrees of charring. Significant artifacts retrieved from the general 20 to 30 centimeter level were 5 Monongahela Cordmarked, punctate, plain and cord-wrapped-stick-impressed lip and 2 Monongahela Plain,

punctate lip (Mayer-Oakes, 1955:196-198) rim sherds. The deposits between the two fireplaces indicate that the pit was also used for purposes of refuse, since quantities of pottery, river pebble chert, freshwater mollusc, small pieces of sandstone, and bone, displaying no evidence of exposure to fire, were retrieved.

Materials recovered from below the plowzone of excavation unit 28-U, but above the level of the second fireplace—16 to 20 centimeters—, were bone fragments (8 display charring) and 1 small shell-tempered sherd. These remains are significant, as they would indicate either continued or a subsequent occupation. The presence of the Monongahela Cordmarked and Plain rim sherds would clearly confirm a Late Woodland Monongahela occupation of the site.

SAMPLE 7: A single charcoal sample composed of three branches was collected from a relatively large, circuloid, sandstone hearth occuring between the 20 to 35 centimeter level of excavation unit 1-P. This sample, TEM-185 (12 grams), was taken from various locations and depths—25 to 33 centimeters—of the fireplace while exposing it. TEM-185, assayed by the Radiocarbon Dating Laboratory, Temple University, has been radiometric dated to 590±80 B.P. (A.D. 1360±80). It is suggested, though, that this date, although acceptable, may be somewhat early.

The hearth, with a maximum diameter of 81 centimeters, was comprised in excess of 70 sandstone fragments varying in size from quite small to large. Again, many of the specimens uncovered displayed a flat surface uppermost. Archaeological remains recovered from the 20 to 33 centimeter level of the fireplace totaled 167 specimens. They were composed of 129 bone fragments, 4 river pebble chert flakes, 18 sherds, 7 freshwater mollusc fragments, and 9 snails. Concerning the bone, only 6 fragments appear to be heat discolored. Animal types which may be identified are deer, bird, tortoise. With regard to the ceramics, 15 are shell-tempered (7 are cordmarked while 4 cannot be determined) and 3 are grit (2 are cordmarked and the other cannot be determined). The former would indicate a Late Woodland occupation.

SAMPLE 8: This specimen was taken from a hearth located nearly equally in excavation units 8-9-Q and 8-9-R. The specimen, DIC-391 (17 grams), consisting primarily of numerous pieces of woodfire charcoal collected from a small concentrated area at the 30 to 33 centimeter level of unit 8-Q, has been dated to 360±110 B.P. (A.D. 1590±110) by the Dicar Radioisotope Laboratory. However, of the twelve radiocarbon assays determined, this is the most recent in time and the author suspects that it may be as much as three-quarters of a century too late.

The fireplace, which is nearly circular in outline, was approximately 80 centimeters in diameter and rested on the subsoil at the 30 to 33 centimeter level. Towards the center of the hearth, at the 33 centimeter level, the soil was heat discolored over an area 40 centimeters long, 25 centimeters wide, and from 2 to 4 deep. Overlying the hearth at the 25 centimeter level was a deer bone and a shell-tempered sherd, while directly beneath it occured 3 postmolds. In one appeared 2 shell-tempered sherds and a freshwater mollusc. The former would identify the feature as being Late Woodland in origin. A previous analysis of the postmolds on the Brokaw site indicates that the hearth postdates at least one occupation of the site.

SAMPLE 9: This sample was recovered from numerous locations of the 20 to 30 centimeter level of excavation unit K-1. It is suggested that the entire level was a midden and living floor, since flecks of charcoal occured throughout the 5-foot square and many of the sherds and bones were split and small. (This conclusion is supported by the materials from the 20 to 40 centimeter level of K-3, see below.) Also, fewer sandstone fragments were present and the bone material recovered from the 22 to 25 centimeter level lay flat in the soil. The specimen, UGa-3430 (11 grams), dated by the Center for Applied Isotope Studies at the University of Georgia, has a radiometric reading of 520±65 B.P. (A.D. 1430±65). This date would appear to be entirely acceptable.

Archaeological remains recovered from the level totaled 894 specimens. They were comprised of 477 bone fragments, 231 sherds, 71 Flint Ridge flint, river pebble chert, and other local chert flakes, 106 freshwater mollusc and snail fragments, 5 pieces of coal, and 3 unidentifiable specimens. With regard to the bone, 396 pieces appear unburned (3 are bird bone beads), while 81 display various degrees of charring. Animal types readily identifiable are deer, bird, and turtle. Concerning the ceramics, both shell and grit-tempered occur. Of the latter type, 12 are cordmarked (1 is a rim), 4 are plain, and 17 are too mutilated to determine. Regarding the former, 49 are cordmarked (4 are rim sherds), 27 are plain, and 122 are too fragmentary to identify. A single drill tip was also found.

A river pebble chert convex-based triangular projectile point (Prufer and Shane, 1970:80) and 4 Monongahela Cordmarked, plain and impressed lip (Dragoo, 1955:101-103), rim sherds in the level would confirm the occupation to be Late Woodland in time. The presence of two hearths containing shell-tempered ceramics in the 30 to 40 centimeter level and the 40 to 47 centimeter level, respectively, would also support a Late Woodland identification.

SAMPLE 10: This charcoal specimen was collected from the 40 to 45 centimeter level of a relatively large, amorphously-shaped, hearth located in the eastern sector of excavation unit K-3. The sample, comprised of numerous small fragments of woodfire charcoal, was retrieved from various locations in the fireplace. The specimen, UGa-3943 (14 grams), radiometric assayed by the Center for Applied Isotope Studies, has been dated to 390±70 B.P. (A.D. 1560±70). Although the date would seem to be a little late, it is, perhaps, satisfactory.

With regard to the fireplace, it was located in a shallow pit that had obviously been excavated, for a narrow, outwardly sloping slot separated parts of it from the adjoining walls. Concerning the hearth matrix, it contrasted sharply with the surrounding loam and clay soil, as it was composed primarily of a light, gray, ash. The maximum diameter of the feature was approximately 120 centimeters, while its depth extended from the 40 centimeter level to the clay bottom at 58. A total of 149 specimens was recovered from the 40 to 50 centimeter level of the fireplace. They were: 9 river pebble chert flakes, 14 pottery sherds, 2 freshwater mollusc fragments, 2 snail shells, 32 pieces of fire-cracked rock, 83 bone fragments, 2 small pieces of coal, a fragment of a charred nut, and a cup stone. The latter object was found in the space along the west wall. Interestingly, only 4 bones exhibited signs of charring. Readily identifiable animal types are deer and tortoise. Within the ceramics three temper types are present. Eleven are shell-tempered (5 are cordmarked, 1 is plain, and 5 are too mutilated to identify), 2 are grit, and 1 is limestone (all are too fragmentary to determine). In addition to the artifacts, a small vertical postmold 4-by-5 centimeters in diameter appeared at the 43 centimeter level in the northwestern part of the hearth and went to a depth of 13.

From the 50 to 58 centimeter level came 15 bones (2 are slightly charred), 6 shell-tempered sherds (3 are cordmarked and 3 are too mutilated to establish), 4 chert flakes (1 of Flint Ridge, 1 of local, and 2 of riverine origins), and a single snail, freshwater mollusc fragment, and a drill tip. A total of 28 specimens. Examination of the soil below this level produced several additional artifacts; however, it was apparent that the area was extensively rodent disturbed. Although it will not be treated here, a second fireplace of nearly equal depths was recorded in the southwestern quadrant of the unit.

Overlying these features was a general midden accumulation. Thus, much of the soil from the base of the plowzone—20 centimeters—to the 30 centimeter level was composed of a soft, light, grayish, ash-filled loam. Recovered from the level were 1099 specimens. These were comprised of 712 bone fragments (88 display various degrees of charring), 226 sherds (201 are shell-tempered, 22 are grit, and 3 have none), 92 chert flakes (42 river pebble, 11 Flint Ridge, and 39 local), 10 freshwater mollusc, 28 snails, 7 pieces of coal, and 1 unidentifiable charred object. With reference to the ceramics, of the 201 shell-tempered sherds, 66 are cordmarked, 23 are plain, and 111 are too small and mutilated to determine. Concerning the grit-tempered, 6 are cordmarked, 3 are plain, and 13 are too fragmentary to establish. Also retrieved were 4 Monongahela Cordmarked, plain and cord-wrapped-stick-impressed lip and 4 Monongahela Plain, cord-wrapped-stick-impressed and plain lip rim sherds. A single sandstone hearth composed of 15 pieces of fire-cracked rock that occurred at the 24 to 27 centimeter level along the east wall and continued into K-4 was the only discernible feature present.

The principal particulars in which the 30 to 40 centimeter level differed were that parts of it terminated as a sterile clay level appeared between 31 and 35 centimeters and the occurrence of a small incompletely excavated and unidentified feature which extended into the wall of L-3. Reported in the midden of this level were 294 pieces of bone (45 evidence heat discoloration), 34 chert flakes (5 Flint Ridge, 18 river pebble, and 11 local), 100 sherds (91 are shell-tempered and 9 are grit), 15 freshwater mollusc fragments, 22 snail shells, and 5 pieces of coal. A total of 470 specimens. Of the shell-tempered ceramics 26 are cordmarked, 10 are plain, and 55 cannot be identified due to their fragmentary condition. An analysis of the grit-tempered materials indicates that 3 are cordmarked, 2 are incised, 1 is cordmarked and incised, and 3 are too damaged to determine. One each of the following ceramic types was also noted:

Monongahela Cordmarked and Plain, cord-wrapped-stick-impressed lips, McFate Incised (Dragoo, 1955:105), a form akin to Shenk's Ferry Cordmarked (Heisey and Witmer, 1964:24; Plate 8, No. 26), and a rim sherd reminiscent of Prufer and Shane's Baum Cordmarked Incised, Rim Class II (1970:51-52; Figure 8, B). Evidence from the dated feature which would indicate a Late Woodland occupation of the site are the ceramics and river pebble chert.

SAMPLES 11 & 12: Finally, two charcoal specimens were recovered from a sandstone hearth located in the southwestern quadrant of excavation unit K-101. One sample, N-3483 (18 grams), was not taken directly from the fireplace but was hand-picked from wet screens. The heat discolored matrix containing the charcoal ranged from 23 to 26 centimeters below the present soil surface. The other sample, UGa-3429 (14 grams), was comprised of charcoal fragments removed with sterlized medical tweezers from seven flotation samples taken from the 20 to 25 centimeter level of the hearth. Part of the sample came from the vicinity of several large Monongahela Cordmarked, plain lip, rim and body sherds. N-3483, dated by The Institute for Physical and Chemical Research, has been radiocarbon dated at 460±55 B.P. (A.D. 1490±55), and UGa-3429, tested by the Center for Applied Isotope Studies, has been dated to 405±65 B.P. (A.D. 1545±65). Thus, there is only a difference of 55 years separating the two. It is not possible to say which is more accurate, as both are entirely plausible.

Time did not permit full excavation of the hearth either vertically or horizontally. Therefore, its size can only be roughly estimated, as it extended into three additional 1-meter square quadrants. Recovered from the fireplace were 400 specimens. These were composed of 226 pieces of fire-cracked rock, 41 sherds (36 are shell-tempered and 5 are grit), 3 Flint Ridge and 7 river pebble chert flakes and cores, 11 freshwater mollusc fragments, 101 pieces of bone (9 are charred), a single piece of coal and charcoal, 6 snails, and 3 unidentifiable objects. Of the 36 shell-tempered sherds 20 are cordmarked, 6 are plain, and 11 are too damaged to establish. Within the grit-tempered 3 are cordmarked and 1 is too fragmentary to determine. Five of the former type are rim sherds: 2 Monongahela Plain, 1 plain and 1 cord-wrapped-stick-impressed lip and 2 Monongahela Cordmarked, 1 plain and 1 oblique notched lip (Dragoo, 1955:100). The absence of the outer surface on another plain lip rim sherd precludes further identification. Regarding the grit-tempered ceramics, 1 is a paddle-edge-impressed lip rim sherd. Easily identifiable animal types are deer and tortoise. The Monongahela Cordmarked and Plain rim and body sherds and river pebble chert would clearly assign the feature to a Late Woodland origin.

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The Burial Cave at "Big Rock"

By Mark Long, Wellston, Ohio

Western Jackson County probably contains one of the largest concentrations of rock-shelter formations to be found anywhere in Ohio. There are hundreds of various sized caves or overhangs that dot the landscape of this particular region. A fairly large number of these rockshelters show varying degrees of evidence that Ohio's prehistoric Indians used them for one purpose or another. A few of these caves were probably employed as semi-permanent dwelling sites while others were merely temporary campsites utilized by Indians who were hunting or traveling. These same prehistoric people also used certain rockshelters as places to bury their dead. These burials may have been a deceased member of a family unit that lived within the cave or they may have been a fallen comrade from a roving band of people far away from their home village. Although the discovery of a prehistoric burial in a rockshelter is not an extreme rarity, it is of enough importance that any such find should be permanently recorded for the benefit of archaeology.

During the middle of August, 1981, a small rockshelter was discovered by two local artifact collectors who were exploring parts of western Liberty Township in Jackson County. The small cave had a sandy and dry floor and appeared that it might have been conducive to human habitation. The two men decided to dig some test sections to determine whether any pottery shards or flint debris could be found indicating that the shelter had once been occupied by ancient man. At first not much was found but while digginig in the southern half of the cave, some pottery and pieces of bone were discovered. The bones were in such a state of disarray that it was first thought they were merely remnants of a deer or other large animal. Bone remains of this type are not unusual in some rockshelters since the Indians split animal long bones for the marrow they contained and left the fragments scattered about the floor or buried in trash pits. It was soon realized, after the discovery of skull fragments and a well preserved lower mandible, that this concentration of bones were those of a human burial. Careful examination of the burial area revealed a large concentration of broken pottery near where the head had been positioned. In the same area were found two unworked halves of a bivalve mussel shell, two pieces of flint, one flint scraper, one fairly complete projectile point, and the broken tip of another point. Also found was the center portion of an elongated rectangular two hole gorget with both ends snapped off at the weak points where the two holes had been drilled.

The rockshelter is located in the Northwest Quarter of (western) Section 12, Liberty Township, Jackson County, Ohio, very near the Pike County borderline. Less than one mile to the southeast is a magnificent rock outcropping which towers almost two hundred feet above the adjacent bottomlands. Known locally as "Big Rock," the top of this stone monolith offers a splendid bird's-eye view of the surrounding territory. The small stream that meanders past its base is bordered in several places by terraces of land that once were the sites of prehistoric Indian encampments. One such encampment existed on the small terrace immediately northwest of "Big Rock." Indian artifacts can usually be found there when the land is plowed during the spring. It is quite possible that the Indian buried in the rockshelter just to the northwest was at one time an occupant of this campsite. Further investigation at the rockshelter did not turn up any more evidence to indicate that it was used as a frequent campsite or dwelling. It would appear that this particular cave was used solely for the purpose of a burial crypt.

Situated very near the ridge top on the west side of a short hollow that empties into Jackson Lake, the burial cave is inter-connected with a very small overhang on the opposite side of the rock outcropping by way of a low crawl-way. The slope immediately in front of the rockshelter is very steep, and there is no evidence of a convenient water supply in the vicinity.

The artifacts which were discovered with the burial are probably of "Woodland" origin. The most complete specimen of the two projectile points is difficult to identify with any typical flint variety, but the gorget is usually associated with the Woodland era. The pottery is cordmarked, and grit tempered, indicating that it too is of Scioto-Woodland tradition.

Fig. 1 (Long) Friends of the author at the mouth of the burial cave indicating size of formation.

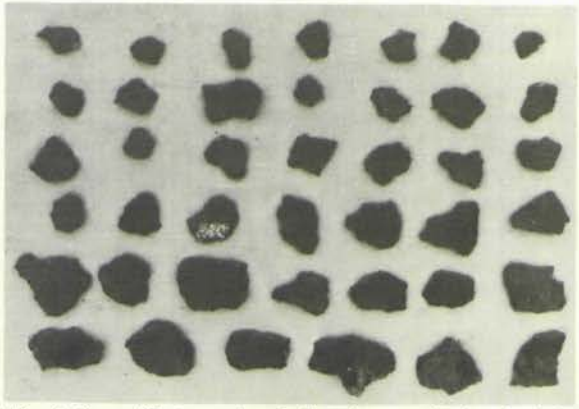

Fig. 2 (Long) Pottery shards found near the head of the burial. Pottery was grit tempered and cordmarked around the rim section.

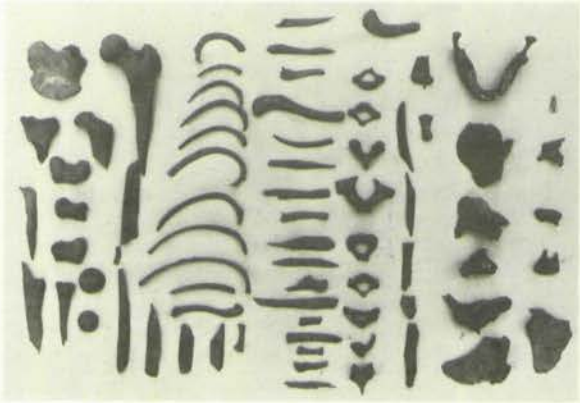

Fig. 3. (Long) Skeletal remains. Femur is upper left and well preserved lower jaw (teeth in excellent condition) is extreme upper right.

Fig. 4 (Long) Artifacts possibly associated with burial. Broken gorget, nearly complete projectile point, and crude scraper or knife are in upper row. Two unworked halves of a bi-valve mussel and chips of unworked flint in bottom row.

Reconstruction And Forensic Analysis Of Prehistoric Infant Skeletal Materials

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Introduction

Priceless materials such as the human infant remains described in this report carry both an opportunity and an obligation, whether in the custody of an individual or a facility such as a university laboratory. It is the responsibility of the individual or institution to protect, preserve, and also to pursue appropriate research on such specimens so that they may be of maximum benefit to science, and to insure that the insights which they may provide into the life and nature of prehistoric populations are not lost.

Infant and sub-adult skeletal material is common in archaeological burial sites, but often fragmentary or in poor condition due to the delicate nature of the bones. Reconstruction of such fragmentary skeletons requires a knowledge of the anatomical and osteological differences between infants and children and adults. Determination of the sex of an individual specimen and its age at time of death also requires employment of different techniques than those applicable to adult materials (adult aging and sex determination criteria are well documented in the literature; see for example: Bass, 1971; Krogman, 1962; Stewart (Ed.), 1970; Ubelaker, 1978).

This report describes the restoration, description, and analysis of three prehistoric human infant burials housed in the laboratory of physical anthropology, Miami University, as part of the Wilbur collection of prehistoric skeletal materials—catalogue numbers PA-3-2, PA-3-3, and PA-3-4. The materials originated from Site 12, Ohio County, Indiana, a Middle to Late Archaic site dating from at least 3000 BP and perhaps as old as 6000 BP. This site, and materials from it, have been previously described by Alexander, 1980a, b; Black, 1934; and Sanders, 1978. A general adaptation of many such groups was a pattern of seasonal migration, focusing on various ecosystems, depending on seasonal food sources. The presence of charred walnut shell at this site suggests a fall habitation, and the likelihood of the infant and other burials occuring in the fall.

The specific goals of this research project were to (1) successfully remove the material from the matrix in which much of it was imbedded, (2) clean and catalogue the specimens, (3) restore and reconstruct them to the extent possible, (4) photograph for laboratory records, (5) complete a forensic analysis of the materials, (6) gain skills and train students in this type of work, and (7) investigate the seemingly high proportion of infant and young child burials from this site.

Removal and Reconstruction

The initial removal and cleaning was accomplished by careful work with surgical and dental instruments, screens, toothbrushes, and eyedroppers of water to soften hard clay surrounding the fragmentary and delicate bones. Cleaned tiny fragments tended to disintegrate upon handling until strengthened and repaired with acetone-based strengthening and glue solutions. During this work, a courtesy sample of a specialized industrial epoxy material arrived. It was designed for strengthening and reconstruction of large fossil reptile (dinosaur) skeletons at a museum, and as a bone adhesive was felt to be potentially useful in work with delicate human bone materials. It proved to be strong but slow working; too viscous for easy use without obscuring surface bone features on such small specimens, and imparted a darkened shade or discoloration to the bone. Such materials are useful, however, if injected with a hypodermic syringe into the cancellous interior of long and irregular bones to impart strength.

All the surrounding matrix (dirt) was fine screened in water solution down to a particle size requiring scanning with a dissection microscope. Materials identified in the matrix included charcoal, red ochre pigment, small animal bones (mouse, etc.), rodent teeth, small fish (minnow) bones, crayfish shell fragments (leg claw parts), small bird claws, several lithic flakes—remanents of tools or the tool-making process, fossil red coral, and four ear ossicles (inner ear bones) of two adults located within the matrix within one foot of infant PA-3-3 (Figure 1).

Cleaning and reconstruction required approximately one hundred total hours of work. Reconstruction was accomplished by

anatomical identification of matching fragments, and gluing them together supported by fine sand—the same technique used in ceramic reconstructions. The useable portions of all skeletons were then assembled in Riker Mounts for protection while under study. These assemblies consist of heavy cardboard flat box bases filled with padding materials overlayed with fine white cotton batting, and a lid or top of glass supported by cardboard at the edges which is pinned at the sides when in place. The specimens are protected, visible, and easily accessible (Figures 2, 3, 4,). Riker Mounts were originally designed for display of entomological (insect, butterfly) collections, and are available at modest cost from numerous science and biological equipment supply houses. Reconstructed skulls were affixed to a firm raised base, and may be protected by plexiglass cubes enclosing the base (Figures 5, 6, 7, 8).

Age Assessment

Age determination was accomplished by assessing the state of calcification of the dentitions, the degree of development and ossification of the separate portions of the occipital bone of the skull, and measurements of the diaphyseal length of the long bones. Dental calcification (tooth formation) and eruption (emergence from the gum) are the most accurate indicators of age in infants, children, and sub-adults. As Ubelaker (1978) has pointed out, numerous studies have demonstrated that dental development (calcification and eruption) is more closely correlated than skeletal development with age in sub-adults (Garn, Lewis, and Polacheck, 1959; Lewis and Garn, 1960). Dental development is strongly controlled by genetic factors (Glasstone, 1938; 1963; 1964), with minimal influence from the environment (Paynter and Grainger, 1961; 1962). Although specific diseases, such as hypo-pituitarism and syphilis, can modify the rate of dental development (Bauer, 1944), most diseases affect teeth little if at all, even though parts of the skeleton may be greatly altered (Niswander and Sujaku, 1965). Endocrine disorders and other maturational problems have been shown to affect teeth only one-fourth as much as the rest of the skeleton (Garn, Lewis, and Blizzard, 1965). The state of calcification of the three infant dentitions was compared with charts of similar data compiled by Ubelaker (1978) after Anderson *et al* (1976) and Moorrees *et al* (1963a, b) for use with American Indian materials. The assessment of age based on degree of development of the occipital bone followed procedures and analysis as suggested by Redfield (1970). Measurements of long bones were taken to the nearest .1 mm. with Mitutoyo dial calipers, and compared with tables developed by Ubelaker (1978) based on protohistoric Arikara materials from South Dakota, Maresh (1955) based on recent Whites, and Johnston (1962) based on Archaic materials from Kentucky. Results of the various methods of age at time of death assessment indicate that the PA-3-2 specimen (Figure 4) was a neonate and died at or near birth, the PA-3-3 specimen (Figures 2, 5, 6) was approximately six months of age, and the PA-3-4 individual (Figures 3, 7, 8) was between 17 and 22 months of age at death.

Sex Determination

Sex determination in infant (and, indeed, all sub-adult) skeletons has been generally regarded in the past as extremely difficult, if not impossible. However, certain sexual differences do begin to develop in the skeleton before birth. The width of the greater sciatic notch of the ilium (pelvis), which is one of the most distinctive features in adult materials, increases faster in females during foetal growth. Measurement of the width-vs-depth of this feature to the nearest .1 mm, and the resulting indices which may be calculated provide useful information (Boucher, 1957). Further, the fact that females grow faster and mature earlier in certain anatomical areas than males makes it possible to utilize *age* criteria in assessing *sex* in sub-adults (Hunt and Gleiser, 1955). The stage of calcification of the teeth may be compared with the state of maturity of the post-cranial skeleton. The method is based on the fact that the post-cranial skeleton matures more slowly in males than in females, whereas the rate of calcification of the teeth is about the same in both sexes. Accordingly, the dentitions and post-cranial skeletons are aged independently, using standards established for males. If the two estimates agree, the individual is probably male. If the results diverge significantly, the unknown individual is probably female. The results of sex assessment indicated that the PA-3-2 (newborn) individual was questionably female, the PA-3-3 (six month) specimen a female. In the PA-3-4 (17-22 month) individual, sex could not be determined due to a lack of necessary portions of the post-cranial skeleton.

Cause Of Death

In regard to possible cause of death of the three specimens, the newborn individual shows no visible evidence of trauma or

pathology. It was found in close proximity to (buried with) a slightly-built adult female, approximately 22-29 years of age at death, and most likely was a stillbirth or neonatal death, possibly associated with the death of the mother as well.

The six-month-old female also shows no evidence of trauma. However, on both temporal and auditory regions of the braincase there is moderate erosion and roughening of the surface bone, possibly the result of infection and associated involvement of the surface bone (periostitus). Although this could be the result of chemical etching from the soil conditions in this case, it is suggestive, as I have observed it before in a number of prehistoric American specimens (in a more complete state of preservation) associated with untreated ear infections and resultant mastoiditis—common in this age group—where it was a clear cause of death. If further analysis is undertaken on this specimen, radiographs of the ends of the shafts of the long bones could reveal the presence (or lack thereof) of "Harris lines" of arrested growth—indicating that the individual had experienced a prolonged febrile period. Further, there is a strong possibility that this (6 mo.) individual was partially cremated in a "fresh" (in the flesh as opposed to dry bones) state. The bone is discolored in a characteristic "smokey" and bluish-gray to white manner in several areas close to the surface of the body, and shows warping and twisting in thinner areas. This is typical of exposure to a temperature in the fresh state of approximately 800°C. Possible substantiation is the presence of charcoal fragments throughout the matrix of this burial (see Krogman, 1962, Stewart (Ed.), 1970, Ubelaker, 1978, and Wells, 1960, for discussions of cremation). Fresh cremation was practised in the Ohio Valley by Adena cultures after the Archaic Period (Webb and Snow, 1945; Willey, 1966).

The 17-22 month old individual again evidences no trauma. The majority of the post-cranial skeleton is missing, and no pathological features are detectable. The cause of death cannot therefore be determined.

A further area of inquiry involved the seemingly high proportion of infant burials in the total known sample from this site. The immediate area from which the three individuals described in this project were recovered yielded a total of twelve individuals: nine fully adult, and the three infants described in this report. The sample is too small and uncertain in its representativeness to draw firm conclusions, but the "25%" figure (3 of 12) was compared to all other well-documented skeletal series from the Archaic Period in the Midwest to ascertain whether or not this is in fact an unusually high proportion of child deaths. The conclusion reached is that it is not, and that there is no evidence of any non-representative or unusual occurrence in this case. In 880 Archaic burials from the Midwest examined by Johnston and Snow (1961), 30% were less than three years of age at death (assuming ages were assessed accurately).

Sub-adult skeletons are often not reported in summary descriptions and comparative studies on skeletal series, for statistical reasons, and most prehistoric sites do contain quite high percentages of sub-adult and infant burials when conditions allow preservation of such delicate materials.

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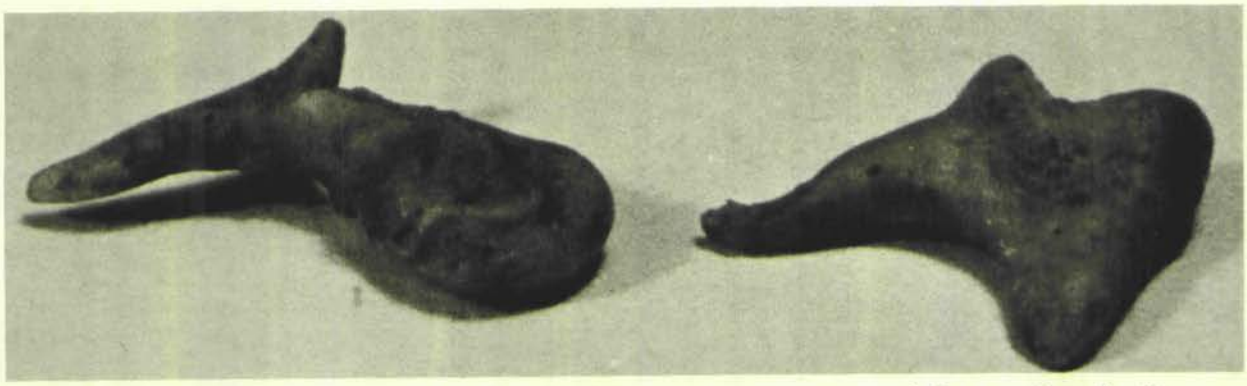
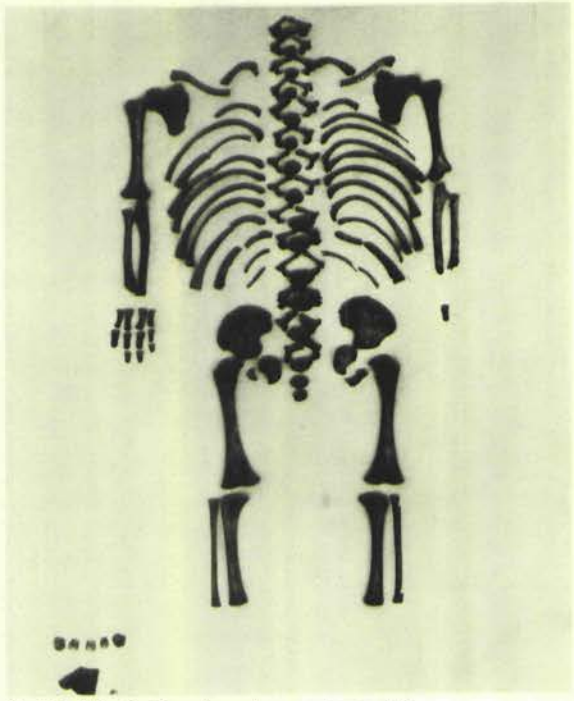
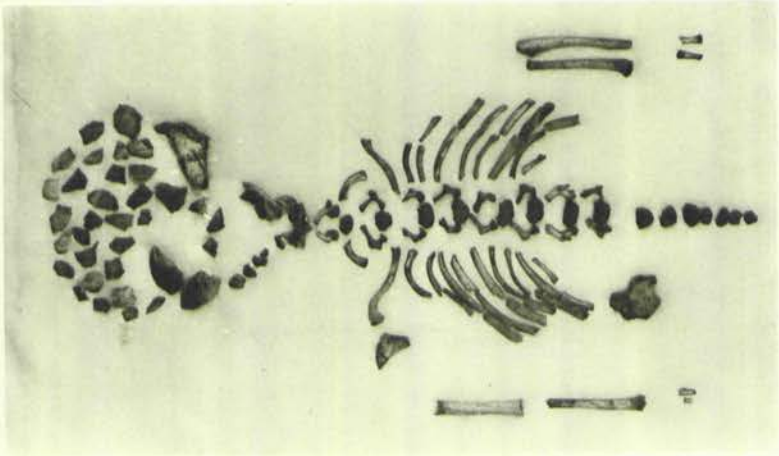


1. Two of four adult ear ossicles from matrix of PA-3-3 burial (each bone approximately 5 mm maximum length)

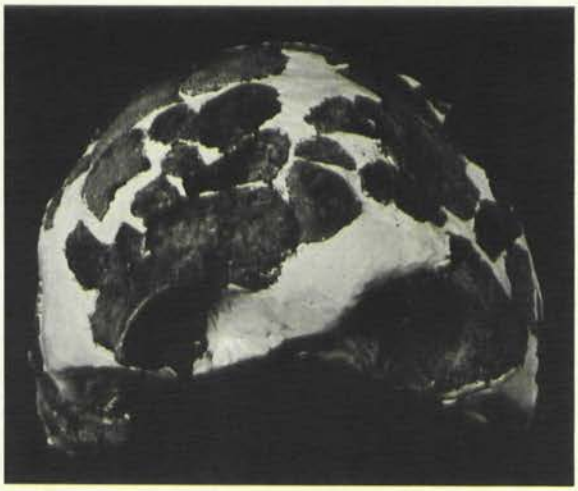


2. PA-3-3, 6 Mo. female, post-cranial skeleton

3. PA-3-4, 17-22 Mo., post-cranial skeleton

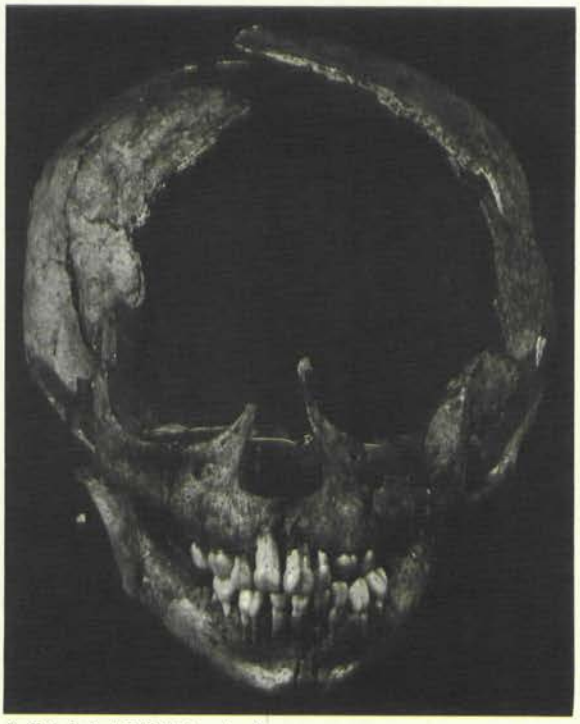


4. PA-3-2, questionable female newborn skeleton



5. PA-3-3, 6 Mo. female, skull

6. PA-3-3, 6 Mo. female, skull



7. PA-3-4, 17-22 Mo. skull

8. PA-3-4, 17-22 Mo. skull

A Polishing Stone from Trumbull County, Ohio

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In the Fall, 1973, issue of the "Ohio Archaeologist" James Murphy reported an axe polishing stone or "polissoir" from Geauga Co., Ohio, and stated that until then only two such artifacts were known in the eastern United States (Murphy, 1973:21). He further stated, "These grooved rocks were undoubtedly used to polish stone axes or celts, as indicated by the deep, V-shaped cross section of the grooves" (ibid.).

Another polishing stone (Fig. 1) was found in 1978 by Jerry Substanley, now of Columbus, Ohio, while he and I were surface hunting in southern Trumbull Co., Ohio. It was located off the edge of a plowed field and was probably moved there when the land was cleared. The present owner was unaware of its existence.

The stone is approximately 30 inches in maximum diameter and 12 inches in maximum thickness with an estimated weight of approximately three hundred pounds. It is undoubtedly of glacial origin although stones of comparable size are not common in this area.

There are five polished or ground surfaces on one face of the stone. The largest is a groove 15 inches long, 2½ inches wide, 1½ inches deep and V-shaped in cross section (Fig. 2, center). Next to that (to the top in Fig. 2) is a broad, shallow, rounded groove 14 inches long, 2½ inches wide and ¼ inch deep. There are also two narrow, shallow grooves that are U-shaped in cross section. Their dimensions are 10½" x ¾" x ⅛" (Fig. 2, bottom) and 13" x 1¾" x ⅛" (Fig. 2, top). The fifth area of use is a flat, smoothed surface 10" x 2½" (Fig. 2, between the small groove at the bottom and the large groove in the center). The different sizes and shapes of the grinding surfaces would seem to indicate use in polishing other surfaces of ground stone tools as well as the bits.

This stone was located on a productive multi-component site that includes a late prehistoric village. The site has produced several ground stone artifacts, mostly in fragmentary condition. Due to ongoing investigation of the site, the exact location will not be revealed at this time. The stone has been removed from the site and is now in my possession.

Reference

Murphy, James L.
1973 A Polissoir in Geauga County, Ohio. Ohio Archaeologist 23(4):21-22.

Fig. 1 (Pigott) Polishing stone in situ, Trumbull Co., Ohio.

Fig. 2 (Pigott) Closer view of the utilized surface. For scale the handle of the pocket knife is approximately four inches long.

Book Review

Prehistoric Pipes: A Study of Reeve Site, Lake County, Ohio

By Richard M. Ahlstrom with the assistance of the Lake County Chapter of the Archaeological Society of Ohio.

Illustrated by Susan Ford—Photographed by William M. King and Mickey Morton.

146 pages — 25 plates — 150 photographs — price $12.50 including postage.

Indian Museum of Lake County
c/o Lake Erie College
Painesville, Ohio 44077

This 6" by 9" book is one of the first of its kind in the archaeological field and is the final result of several years of diligent work by a dedicated group of amateur archaeologists. Our Society can be justly proud of its newest chapter—the Lake County Chapter—and member-author Richard Ahlstrom for the successful conclusion in book form of an ambitious project. Not enough can be said for Mr. Ahlstrom and the Lake County Chapter for not only salvaging the Reeve Site—an important late prehistoric village—under imminent peril of destruction, but for also using their time and resources to publish a fine book on the numerous pipes from the site. There are photographs and descriptions of nearly 200 pipes from this 1250 AD to 1500 AD site. A wide variety of forms including animal effigy, vasiform, keel-shaped, human effigy and many others are analyzed and discussed. Heretofore, volumes of archaeological publications would have had to be read to obtain much of the information contained in *Prehistoric Pipes.*

Your editor read this book from cover to cover with great interest and I highly recommend it. The book will reward not only those interested in prehistoric pipes, but anyone interested in Indians and archaeology in general—especially from the standpoint of what can be retrieved from an imperiled site by a group of people with a common goal. The book will undoubtedly become a prominent reference source in the pipe field for both collectors and archaeologists.

Robert N. Converse

White Horse Publishers announces a new book by Col. Raymond C. Vietzen called *The Old Warrior Speaks.* Cloth bound, 269 pages, 300 illustrations. Size 9 in. by 12 in. imprinted in gold. Order from the author—

Col. Raymond C. Vietzen
8714 West Ridge Road
Elyria, Ohio 44035

Price—$35.00 plus sales tax for Ohio residents.

This latest of Vietzen books portrays over 50 years of archaeological and collecting experience. Included is a history of the Indian Ridge Museum as well as new facts on the life of George Armstrong Custer. Prominent people in the collecting field are discussed and new and old finds of artifacts are illustrated and described.

Back Cover

This cache of Hopewell blades was found in Union County, Ohio. Not all the pieces in the cache have yet been found since a new one occasionally comes to the surface. The blades are all made of Flint Ridge flint and at least two of them are of the honey colored variety greatly favored by Hopewell flint craftsmen. As can be seen in the color photograph, all are of fairly uniform size and design. Collection of Dana Baker, Mt. Victory, Ohio.

OBJECT OF THE SOCIETY

The Archaeological Society of Ohio is organized to discover and conserve archaeological sites and material within the State of Ohio, to seek and promote a better understanding among students and collectors of archaeological material, professional and non-professional, including individuals, museums, and institutions of learning, and to disseminate knowledge on the subject of archaeology. Membership in this society shall be open to any person of good character interested in archaeology or the collecting of American Indian artifacts, upon acceptance of written application and payment of dues.